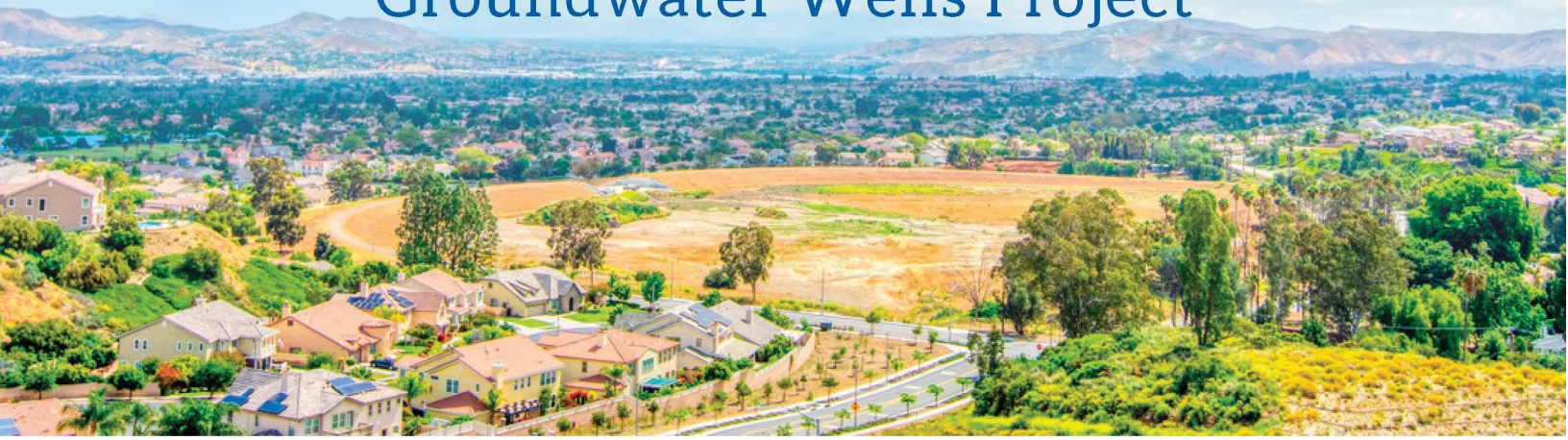
EASTERN MUNICIPAL WATER DISTRICT

Draft Initial Study and Mitigated Negative Declaration Cactus Avenue Corridor Groundwater Wells Project



MARCH 2020

WOODARD & CURRAN

Draft
Initial Study and Mitigated Negative Declaration

Cactus Avenue Corridor Groundwater Wells Project

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Acronyms

Acronym	Definition
APE	Area of Potential Effect
AWWA	American Water Works Association
Basin Plan	Santa Ana Basin Water Quality Control Plan
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CMP	Congestion Management Program
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
COC	Contaminants of Concern
CWA	Clean Water Act
dB	decibel
dBA	a-weighted decibel
DNL or L_{dn}	day-night average sound level
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
DWSRF	Drinking Water State Revolving Fund
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
g	gravity
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan

Acronym	Definition
HCP	Habitat Conservation Plan
IBC	International Building Code
IEBL	Inland Empire Brine Line
IS/MND	Initial Study/Mitigated Negative Declaration
L_{10}	ten-percentile exceeded sound level
LOS	level of service
LRTS	Long Range Transportation Study
LUFT	leaking underground fuel tank
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendant
MSHCP	Multiple Species Habitat Conservation Plan
MT	metric tons
MWD	Metropolitan Water District of Southern California
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OHW	ordinary high water
PCE	perchloroethylene
PFAS	per- and polyfluoroalkyl substances
PM	particulate matter
PPV	peak particle velocity
RCTC	Riverside County Transportation Commission
rms	root mean square
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alternation Agreement
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act

Acronym	Definition
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TMDL	total maximum daily load
UBC	Uniform Building Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compound
WRCOG	Western Riverside Council of Governments

1. INTRODUCTION

1.1 Purpose of this Document

Eastern Municipal Water District (EMWD) has prepared this Initial Study (IS) to evaluate the potential environmental impacts related to implementation of the Cactus Avenue Corridor Groundwater Wells Project (the "proposed Project," "proposed action," or "Project"), which consists of development and operation of groundwater extraction, treatment, and distribution facilities.

EMWD is the lead agency under the California Environmental Quality Act (CEQA) for the proposed Project. CEQA requires that the lead agency prepare an IS to determine whether an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated Negative Declaration (MND) is needed. EMWD has prepared this IS to evaluate the potential environmental consequences associated with the Cactus Avenue Corridor Groundwater Wells Project, and to disclose to the public and decision makers the potential environmental effects of the proposed Project. Based on the analysis presented herein, an MND is the appropriate level of environmental documentation for the proposed Project.

1.2 Scope of this Document

This IS/MND has been prepared in accordance with CEQA (as amended) (Public Resources Code Section 21000 et. seq.) and the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15000 et. seq.), as updated on December 28, 2018. CEQA Guidelines Section 15063 describes the requirements for an IS and Sections 15070–15075 describe the process for the preparation of an MND. Where appropriate, this document refers to either the CEQA Statute or State CEQA Guidelines (as amended in December 2018). This IS/MND contains all of the contents required by CEQA, which includes a project description, a description of the environmental setting, potential environmental impacts, mitigation measures for any significant effects, consistency with plans and policies, and names of preparers.

This IS/MND evaluates the potential for environmental impacts to resource areas identified in Appendix G of the State CEQA Guidelines (as amended in December 2018). The environmental resource areas analyzed in this document include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources

- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

To support compliance with the federal environmental review requirements of potential funding programs, this document includes analysis pertinent to federal regulations (also referred to as federal cross-cutters or CEQA-Plus). Guidelines for complying with cross-cutting federal authorities can be found in the Drinking Water State Revolving Fund (DWSRF) regulations at 40 Code of Federal Regulations (CFR) Section 35.3575.

The federal cross-cutters analyzed in this document include:

- Archaeological and Historic Preservation Act (AHPA)
- Clean Air Act (CAA)
- Coastal Zone Management Act (CZMA)
- Federal Endangered Species Act (FESA)
- Environmental Justice
- Farmland Protection Policy Act
- Fish and Wildlife Coordination Act (FWCA)
- Floodplain Management: Executive Orders 11988, 12148, and 13690
- Magnuson-Stevens Fishery Conservation and Management Act
- Migratory Bird Treaty Act
- National Historic Preservation Act (NHPA)
- Protection of Wetlands
- Rivers and Harbors Act, Section 10
- Safe Drinking Water Act, Sole Source Aquifer Protection
- Wild and Scenic Rivers Act
- Environmental Alternative Analysis

1.3 CEQA Process

In accordance with CEQA Guidelines Section 15073, this Draft IS/MND will be circulated for a 30-day public review period (March 10, 2020 – April 9, 2020) to local and state agencies, and to interested organizations and individuals who may wish to review and comment on the report. EMWD will circulate the Draft IS/MND to the State Clearinghouse for distribution to State agencies. In addition, EMWD will circulate a Notice of Intent to Adopt a Mitigated Negative Declaration to the Riverside County Clerk, responsible agencies, and interested entities. A copy of the Draft IS/MND is available for review at: https://www.emwd.org/emwd-construction-updates.

Written comments can be submitted to EMWD by 5:00 PM on April 1, 2020 and addressed to:

Joseph Broadhead, Principal Water Resources Specialist
Eastern Municipal Water District
2270 Trumble Road
P.O. Box 8300
Perris, CA 92572-8300
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Following the 30-day public review period, EMWD will evaluate written comments and telephone calls received on the Draft IS/MND and incorporate any substantial evidence that the proposed project could have an impact on the environment into the Final IS/MND and prepare a Mitigation Monitoring and Reporting Program (MMRP).

EMWD's Board of Directors will consider adopting the Final IS/MND and MMRP in compliance with CEQA at a publicly noticed meeting, planned for May 20, 2020.

1.4 Impact Terminology

The level of significance for each resource area uses CEQA terminology as specified below:

No Impact. No adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable.

Less than Significant Impact. Potential adverse environmental consequences have been identified. However, they are not adverse enough to meet the significance threshold criteria for that resource. No mitigation measures are required.

Less than Significant with Mitigation Incorporated. Adverse environmental consequences that have the potential to be significant but can be reduced to less than significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.

Potentially Significant. Adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared to meet the requirements of CEQA.

2. PROJECT DESCRIPTION

2.1 Project Overview

The Cactus Avenue Corridor Groundwater Wells Project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The Project includes construction and operation of extraction wells, raw water pipelines, a water treatment and blending facility, and treated water pipelines. Please refer to *Section 2.6 Proposed Project Description* for a detailed description of the Project components.

2.2 Project Purpose

The overall goal of the Project is to increase EMWD potable supplies while also cleaning up contamination areas of concern in the Perris North Basin. Currently, groundwater in the Perris North Groundwater Management Zone is contaminated. Contaminants of concern (COCs) include perchloroethylene (PCE), volatile organic compounds (VOCs), nitrate, perchlorate, total dissolved solids (TDS), fluoride, and manganese (co-mingled VOC-Nitrate Plume). Potential contamination sources were identified by EMWD through implementation of the Drinking Water Source Assessment Program (DWSAP), as well as the State Water Resource Control Board (SWRCB)'s GeoTracker and Department of Toxic Substances Control (DTSC)'s GeoTracker and EnviroStor database research, in developing a map of the comingled plume.

The Project would also augment local water supply in the EMWD service area by extracting and treating contaminated groundwater. In doing so, it would reduce EMWD's need to purchase additional imported water. Currently, approximately 75 percent of EMWD's potable water demand is supplied by imported water from MWD through its connections to the Colorado River Aqueduct and its connections to the State Water Project, while only approximately 25 percent of EMWD's drinking water comes from local EMWD groundwater wells. The majority of the groundwater produced by EMWD comes from its wells in the Hemet and San Jacinto areas. EMWD also has existing wells in the Moreno Valley, Perris Valley, and Murrieta areas (EMWD n.d.a). In 2020, EMWD's potable and raw water demand was estimated to be approximately 150,000 AFY according to its latest Urban Water Management Plan (EMWD 2016). The proposed Project is expected to produce approximately 3,700 AFY, which equates to approximately 2.5 percent of the total demand, off-setting the equivalent volume of imported supply.

2.3 Project Location

The proposed Project is located in the City of Moreno Valley, in the western portion of Riverside County, California. The Project vicinity is generally bounded on the west by Interstate 215 and to the north by State Route 60 (see **Figure 2-1 Regional Location**). Two general areas have been identified for the proposed Project facilities: the North and East Sub-Areas. The North Sub-Area is immediately to the north of March Air Reserve Base (MARB) and the East Sub-Area is immediately to the east of the MARB. Both Sub-Areas are located outside the published extent of MARB contamination plumes.

EMWD has not finalized the location of the proposed extraction wells, treatment and blending facility, or pipelines. Instead, EMWD is considering several options within the two Sub-Areas. Wells would be constructed at various sites in the City, and raw water pipelines would be constructed within existing roadway rights of way to link these sites with the proposed treatment facility (see **Figure 2-2 Project Overview**). The proposed raw water pipeline would extend west to east along Alessandro Boulevard or a parallel street (beginning west of Graham Street), then turn south and travel along Perris Boulevard or Kitching Street, terminating before Iris Avenue. Well and treatment facility sites would be located at sites along this alignment.

2.4 Project Siting Criteria

The siting of the Project components would be based on the following criteria:

- Well spacing would be at least 2,000 feet, where practical, within the comingled areas of concern;
- Well distance from known point source contamination sites would avoid or minimize impacts on groundwater remediation systems, if any;
- Parcels would be vacant sites, one-half acre or larger, and have access to public roads;
- Thickness of alluvium would be approximately 250 feet or more;
- Sites would be able to accommodate a well and comply with regulatory set-back requirements (e.g., property boundaries, sewer pipelines and storm drains);
- Wells would be located 50 feet from property lines to accommodate the 150-feet by 150-feet permanent well footprint; and
- EMWD would not place proposed Project structures at sites that would require substantial alteration or removal of public structures that are existing.

2.5 Environmental Setting

The Project area setting is generally built-out. Surrounding land uses include single-family residential, multi-family residential, schools, churches, libraries, neighborhood commercial, office, public facilities, and open space/park.

2.5.1 Sensitive Receptors

Sensitive receptors within the Project vicinity include single-family residences, multi-family residences, schools, churches, and day care centers. In some cases, residences or schools are located adjacent to the well sites, as noted in the site descriptions above. The following schools are located within one-quarter mile of the individual Project sites: Armada Elementary School, Chaparral Hills Elementary School, Creekside Elementary School, Hendrick Ranch Elementary School, Ramona Elementary School, March Mountain High School, Moreno Valley Adult Education, and Victoriano Elementary School. Two hospitals in Moreno Valley, the Riverside County Regional Medical Center

and Kaiser Permanente Moreno Valley Medical Center, are both at least one mile from the Project sites.

2.5.2 Utilities

Electrical service in the proposed Project area is provided by Moreno Valley Utility (MVU) and Southern California Edison (SCE). MVU's service area extends from the City boundary in the south up to Bay Avenue, covering the majority of the proposed Project area. Electrical service for the proposed Project alignment between Bay Avenue and Cottonwood Avenue (bound by Heacock Street and Indian Street) is provided by SCE. Natural gas service for the entire proposed Project area is provided by the Southern California Gas Company. EMWD provides water and wastewater services in the Project area. Solid waste services are provided by Waste Management of Inland Valley. Existing facilities for these utilities are located throughout the vicinity of the proposed Project.

2.5.3 Transportation

The Riverside County Transportation Commission (RCTC) owns a rail line located west of the City, parallel to I-215 (roughly two miles west of the Project site), which carries commuter rail service and a low volume of freight trains. Bikeways also exist in the Project vicinity. Those nearest to the Project site are intermittent Class 2 bike lanes on Alessandro Boulevard, Class 2 bike lands on Cactus Avenue, and a Class 3 bike route along Cottonwood Avenue (City of Moreno Valley, 2014; Google Maps, 2019). Active bus routes in the area are operated by Riverside Transit Agency (RTA) and include line 11 along Alessandro Boulevard, Indian Street, and Cactus Avenue; line 18 along Cottonwood Avenue, Perris Boulevard, and Kitching Street; line 19 long Perris Boulevard; and line 20 along Alessandro Boulevard (RTA 2020). The City of Moreno Valley (2019c) has designated truck routes that run east-west along Alessandro Boulevard and Cactus Avenue, and north-south along Heacock Street and Perris Boulevard.

There are no state-designated scenic highways in the Project vicinity. Ramona Expressway, three miles south of the Project area, is a County-eligible scenic highway, but is not designated as a scenic highway (Riverside County, 2017). The nearest state-designated scenic highway is State Route 243, approximately 20 miles east of the Project site (Caltrans, 2019).

2.5.4 Airports

The March Air Reserve Base/March Inland Port is located southwest of the City, roughly one-half mile from the Project area. It is currently active as a center for military reserve activities and as a military communication center. The runways at the base are located along the western edge of the base, approximately 1.75 miles from the Project site. Other municipal airports in the region are far removed from the Project area; the nearest is the Perris Valley Airport which is located over eight miles south of the Project area.

2.5.5 Air Quality and Water Quality

The Project is located within the South Coast Air Quality Management District (SCAQMD), within the South Coast Air Basin (SCAB). The City and Project sites lie within the San Jacinto River watershed. Water quality is regulated by the Regional Water Quality Control Board (RWQCB), Santa Ana Region. Concrete-lined drainage channels exist in the Project area; notable drainage channels in the Project vicinity are those along Kitching Street and Camino Flores.

2.5.6 Geology

The Project area lies on bedrock known as the Perris Block. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Elsinore Fault, and the Santa Ana River (with a non-defined southeast boundary). The San Jacinto Fault is the closest fault zone and is located just over four miles from the Project area. The Project area is not known to be located on soils with the potential for liquefaction (City of Moreno Valley, 2006b).

2.5.7 Habitat Conservation Plan

The Project area is within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP was developed by Riverside County to aid in maintaining biological and ecological diversity within the region, while addressing requirements of the State and FESAs. The MSHCP defines a reserve system that includes existing and proposed core habitat blocks and habitat linkages to accommodate the needs of wildlife and plant species. The Plan was completed in 2003, and associated permits were issued in 2004. EMWD is not a signatory to the MSHCP. None of the Project features are located within existing or proposed reserve or criteria areas of the MSHCP.

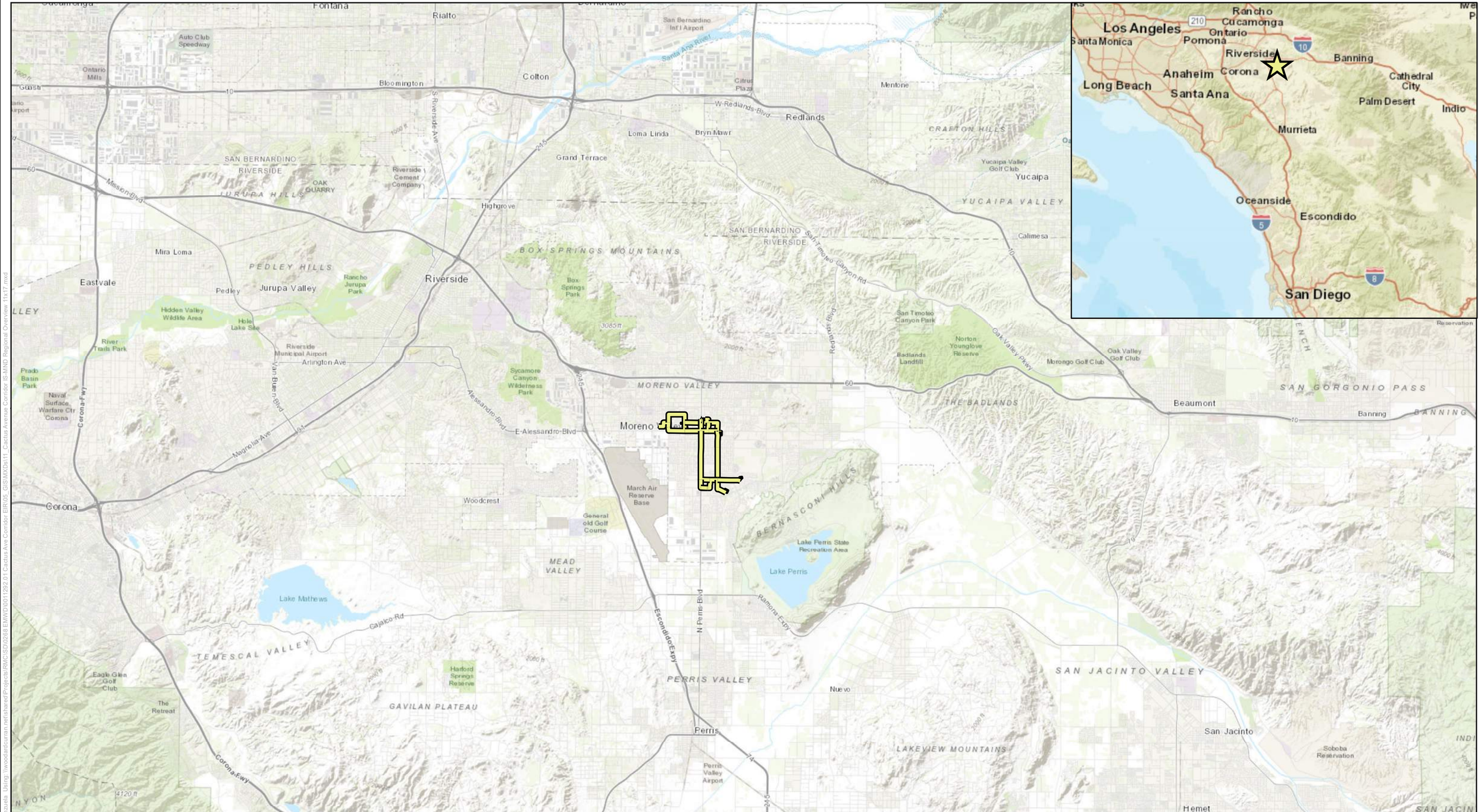

Figure 2-1
Regional Overview

Cactus Avenue Corridor
Groundwater Wells Project IS/MND

Legend

Project Location

N

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Map Created: March 2020

0 0.75 1.5 3 Miles

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community**
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Figure Exported: 3/4/2020 By: gvalenzuela Using: \\woodardcurran.net\shared\Projects\RMCSD\0268 EMWD\0011292.01 Cactus Ave Corridor EIR\05_GIS\MXDs\11_Cactus Avenue Corridor IS-MND Regional Overview 11x17.mxd

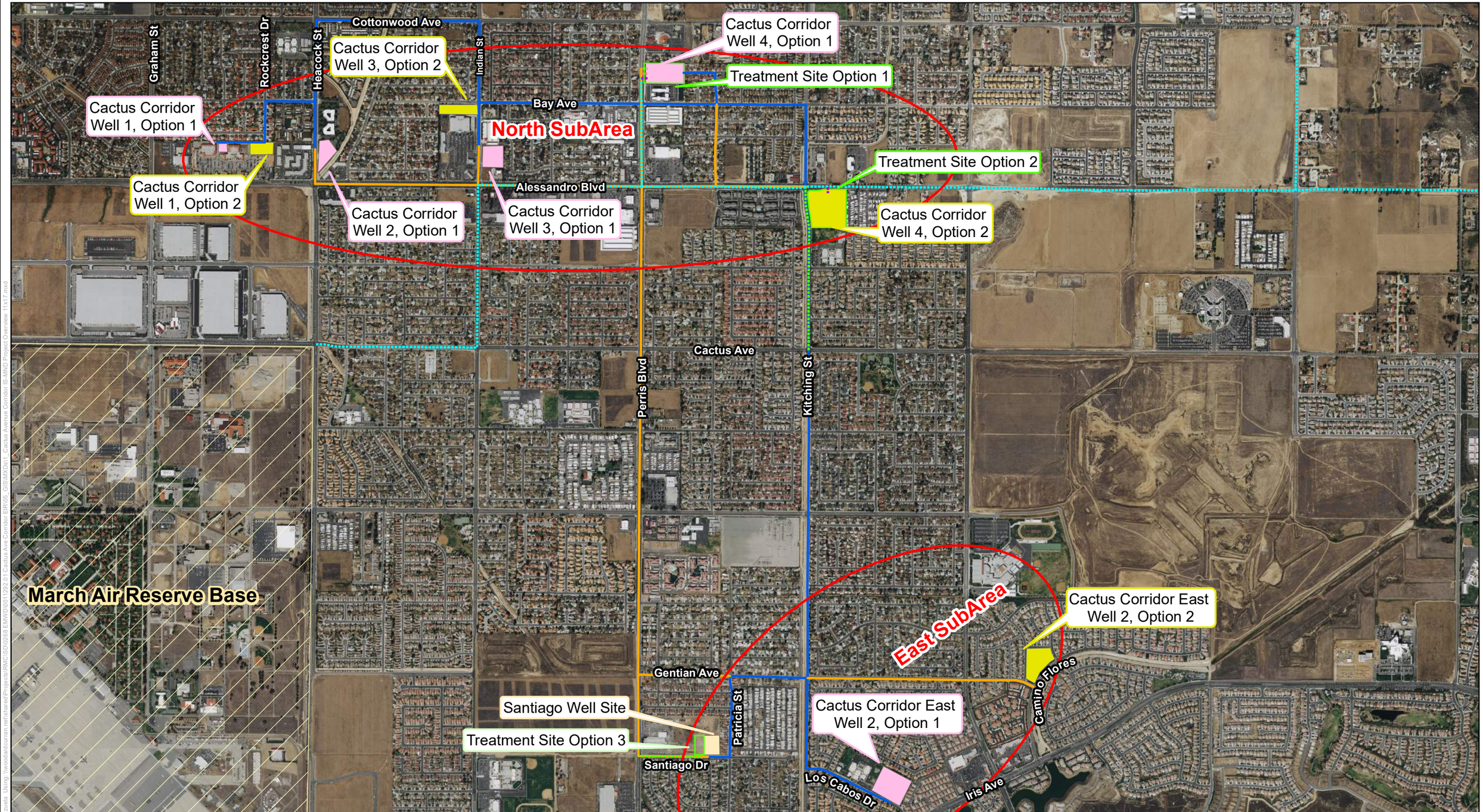

Figure 2-2
Project Overview

Cactus Avenue Corridor Groundwater Wells Project IS/MND

Legend

- Option 1
- Option 2
- Santiago Well Site
- Treatment Locations
- March Air Reserve Base
- Well Monitoring Zones
- Option 1 Raw Water Pipeline Corridor
- Alternative Raw Water Pipeline Corridors
- Blend Water to Treatment
- Brackish Water to Sewer Pipeline
- Future Cactus II Feeder Pipeline (not part of the Project)
- Treated Water Pipeline to Distribution

N

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Map Created: March 2020

0 0.075 0.15 0.3 Miles

2.5.8 Existing Site Conditions

Existing conditions at each optional well sites are summarized below with a photograph of the existing site as of December 2019:

Cactus Corridor (North Sub-Area) Well Sites

Cactus Corridor Well 1, Option 1: The site is an interior vacant lot; current land cover at the site consists of weedy/ruderal grass. The site is surrounded by paved surface parking and a fitness center. Single-family homes exist to the north, across the surface parking lot. The site is approximately one-half acre. The photograph below is taken from the parking lot on Alessandro Boulevard, looking north.

Photo 1: Cactus Corridor Well 1, Option 1 Site

Cactus Corridor Well 1, Option 2: The site is an interior vacant lot. Vegetation at the site consists of weedy/ruderal grass and some trees along the perimeter of the site. The site is surrounded by paved surface parking, residences, and a church. The site is approximately two acres. The photograph below is taken from the parking lot on Alessandro Boulevard, looking northeast.

Photo 2: Cactus Corridor Well 1, Option 2 Site

Cactus Corridor Well 2, Option 1: The site is a corner triangular vacant lot located at the northeast corner of Heacock Street and Alessandro Boulevard. Trees exist along the perimeter near Heacock Street. Sparse ruderal vegetation covers most the site, with a pocket of denser vegetation. The site is bordered on the east by a concrete-lined drainage. To the north of the site is paved surface parking. Heacock Street is immediately west of the site. The site is approximately two acres. The photograph below is taken from the edge of the site near the intersection of Alessandro Boulevard and Heacock Street, looking northeast.

Photo 3: Cactus Corridor Well 2, Option 1 Site

Cactus Corridor Well 3, Option 1: The site is a vacant parcel covered by ruderal vegetation and bare ground. Residences are located to the east of the site. Commercial areas border the site to the north, south, and west, including a Food 4 Less, Auto Zone, and self-storage. The site is approximately three acres. The photograph below is taken from the edge of the site closest to the intersection of Alessandro Boulevard and Indian Street, looking northeast.

Photo 4: Cactus Corridor Well 3, Option 1 Site

Cactus Corridor Well 3, Option 2: The well would be located in the existing Bayside Park. The site is a developed park with paved walkway, contoured grass, trees, and play area. The site abuts Food 4 Less grocery store to the south, and two residences to the west. Bay Avenue runs north along the site, with residences on the north side of Bay Avenue. Indian Street forms the east border of the site. The site is approximately two acres. The photograph below is taken from the corner of the site near the intersection of Bay Avenue and Indian Street, looking southwest.

Photo 5: Cactus Corridor Well 3, Option 2 Site

Cactus Corridor Well 4, Option 1: The site is a vacant parcel covered by bare earth and grass, with some trees along the western edge. The site is bordered to the south by a school, Riverside County Education Academy. Perris Boulevard forms the western border of the site. Residences abut the site to the north and east. The site is approximately five acres. The photograph below is taken from the edge of the site on Perris Boulevard, looking east.

Photo 6: Cactus Corridor Well 4, Option 1 Site

Cactus Corridor Well 4, Option 2: The site is a large open grassy field. Kitching Street forms the western boundary of the site, and Alessandro Boulevard forms the northern boundary. A mobile home park borders the eastern edge of the site. Hendrick Ranch Elementary School is located immediately to the south and adjacent to the site. The site is approximately eight acres. The photograph below is taken from the southwest corner of the site on Kitching Street near Hendrick Ranch Elementary School, looking northeast.

Photo 7: Cactus Corridor Well 4, Option 2 Site

Cactus Corridor East (East Sub-Area) Well Sites

Cactus Corridor East Santiago Well Site: The site is located at the City of Moreno Valley Corporate Yard on Santiago Drive between Nan Avenue and the intersection with Patricia Street. The site consists of bare ground, with a depression that forms a seasonal water body in the southeast corner of the site. Single-family residential neighborhoods border the east edge of the site. Santiago Drive borders the south of the site, with residential areas across the street from the site. The remainder of the Corporate Yard borders the north and west sides of the site. The site is approximately two acres. The photograph below is taken from the southern edge of the site on Santiago Drive, looking east.

Photo 8: Cactus Corridor East Well "Santiago" Site

Cactus Corridor East Well 2, Option 1: The well would be constructed in the existing Victoriano Park, which is developed with extensive grasslands, bathroom facilities, baseball fields, paved pathways, and surface parking. Victoriano Elementary School is located northwest of the park. To the north and east, single-family residences surround the park. To the southwest, Los Cabos Drive borders the site. The site is approximately five acres. The photograph below is taken from the southwest edge of the site along Los Cabos Drive, looking north.

Photo 9: Cactus Corridor East Well 2, Option 1 Site

Cactus Corridor East Well 2, Option 2: The well would be located in the existing Parque Amistad, a park developed with extensive grass fields, trees and ball fields, and paved walkways. The park is bordered on all sides by paved roads (Camino Flores, Calle Camelia, Calle Alto, and Caballo Road). Residential neighborhoods surround the park. The site is approximately four acres. The photograph below is taken from the western edge of the site along Caballo Road, facing east.

Photo 10: Cactus Corridor East Well 2, Option 2 Site

Treatment Facility Sites

Option #1 Treatment Facility Site is at the same location as Cactus Corridor Well 4, Option 1 in the North Sub-Area. The existing condition of the site is described above. This site would also accommodate a component of a separate EMWD project: Turnout 2 for the Cactus II Feeder pipelines project. The Cactus II Feeder Turnout 2 would be constructed on one third of this site through January 2023. The other two-thirds of the site would be available for construction of the proposed treatment and blending facility and extraction well, if the site is selected. The Option #2 Treatment Facility Site is at the same location as Cactus Corridor Well 4, Option 2 in the North Sub-Area and the Option #3 Treatment Facility Site is at the same parcel as the Santiago Well Site in the East Sub-Area. The existing conditions of the sites are described above.

Pipeline Alignments

The potential pipelines would be constructed in existing roadway rights-of-way and would generally travel through areas zoned for residential, commercial, and office uses. There would be several crossings of intersections and concrete-lined drainage channels.

2.6 Proposed Project Description

The Project includes construction and operation of extraction wells, raw water pipelines, a water treatment/blending facility, and treated and blend water pipelines. Each of the components are described in detail in this Section.

2.6.1 Extraction Wells

Up to four extraction wells (each approximately 250 gallons per minute [gpm]) would be constructed in the North Sub-Area. Up to two extraction wells (each approximately 650 gpm) would be constructed in the East Sub-Area. The locations of the wells have yet to be finalized (with the exception of the East Sub-Area well that would be located on Santiago Drive). Instead, EMWD has identified six potential locations for the four North Sub-Area wells and two potential locations for the second East Sub-Area well. All of the well site options were chosen based on the criteria described in Section 2.4 Project Siting Criteria. This document analyzes the environmental impacts that could be associated with all nine of the site options.

The wells would be drilled to a depth of approximately 1,000 feet. The annual volume of potable water that would be produced from the new extraction wells is estimated at 3,710 acre-feet per year (AFY) ([250x4]+[650x2] x 525,600 minutes per year ÷ 325,851 gallons per acre foot = 3,710 AFY). The groundwater extraction wells would be expected to have a lifespan of 30 years.

Each well would have a permanent footprint of approximately 20,000 square feet (150 feet by 150 feet) minimum. To minimize long-term noise from the pumps and to provide security, each well would be enclosed within a concrete masonry unit (CMU) block well house. In addition, an eight-foot perimeter CMU wall would be installed at each

of the well sites and wells would be sited at least 50 feet from the nearest existing land uses. The approximate 20 by 20 foot pump and well housing would be included in the well footprint area. The pump and well housing structure would be no taller than 15 feet.

Blow-off from a well is typically required for either clearing initial highly turbid water and sediment or to flush the well to meet bacteriological requirements prior to connecting the raw well water to the treatment system. Where groundwater water quality allows discharge to the ground, blow-off from the well typically discharges either to the storm drain system or to a blow-off pond. Where the groundwater water quality fails to meet regulatory standards for discharge to an unlined blow-off pond, discharge to sewer may be required. If required, the connection to the sewer is typically accommodated by directly discharging to the sewer, or by utilizing temporary onsite storage through a lined blow-off pond or holding tank that would be pumped to the sewer. The raw water well connection to the sewer would require a back-flow device, such as an air gap, and California Division of Drinking Water approval.

Well Construction

The extraction wells would be constructed in two phases: a well drilling phase, and a well equipping phase. Well drilling would last nine months per well, including two weeks of continuous drilling operation and additional nighttime construction activities (for well development and testing) occurring over an additional 12 weeks. Well drilling is assumed to require drill operation for 24 hours/day to prevent borehole collapse. The well equipping phase consists of developing the site such as construction of the blow off pond, the building, mechanical and electrical components for the well and would last approximately 12 months per well (does not include treatment).

Construction of each well would require the estimated construction equipment shown in **Table 2-1**.

Table 2-1: Construction Vehicle Fleet for Wells

Equipment	Number Required for Each Well
Backhoe/Loader	1
Drilling Rig	1
Crane	1
Utility Truck	1
Water Truck	1
Welder	1
Compressor	1
Pump	1
Pick-up Trucks	2
Concrete Pumper	1
Generator	1

With the exception of the site options Cactus Corridor Well 3 Option 2, Cactus Corridor East Well 2 Option 1, and Cactus Corridor East Well 2 Option 2, which are proposed at existing public parks, construction of the extraction wells is assumed to temporarily disturb

100 percent of each of the parcel sites. Each well site would be designed to utilize the existing grade of the parcel where applicable.

Based on the wells' approximate depth (1,100 feet) and permanent footprint (approximately 150 by 150 feet, minimum), and the typical borehole diameter of 32 inches, it is estimated that approximately 230 cubic yards (cy) of drill cuttings would be exported from each well site. Additional material export would be associated with construction of each well site foundation and pump house. The total material exported for each well, foundation and pump station would be approximately 300 cy (i.e. 1,800 cy of export total for all six of the Project's wells).

The estimated amount of material export from construction of the well blow-off pond at each well site is 2,000 cy (i.e. 12,000 cy of export in total for all six of the Project's wells). Material from drilling activities would be disposed to the nearest landfill.

Portable, steel liquid container tanks (i.e. Baker Tanks) would be used for onsite dewatering clarification. There are three options for disposal of dewatering and well testing water:

- Discharge to land per RWQCB National Pollutant Discharge Elimination System (NPDES) Permit/Waste Discharge Requirements for construction dewatering; or
- Discharge to storm drain per RWQCB NPDES Permit and Riverside County Flood Control and Water Conservation District requirements; or
- Discharge to EMWD sewer.

Well Operations

Once operational, the volume of water pumped from each well is estimated to be 250 gpm for the North Sub-Area wells and 650 gpm for the East Sub-Area wells. Operation of the pumps would involve energy usage (kilowatt hours per day [kWh/day]), as summarized in **Table 2-2**. In addition, each site would be provided with a portable generator connection for emergency scenarios at a minimum. Emergency generators may be installed at the well sties at a later date. Operations and maintenance (O&M) activities would involve monthly site visits from EMWD operators to inspect the site.

Table 2-2: Energy Consumption

Equipment	Qty	hp	hrs/day	kWh/day	Comments
Cactus Corridor Wells (North sub-area)	4	50–75	24	3,500–5,400	Range depends on the type of well pump provided (vertical vs submerged)
Cactus Corridor East Wells (East sub-area)	2	200–250	24	7,100–9,000	Range depends on the type of well pump provided (vertical vs submerged)

2.6.2 Treatment Facility

A treatment facility would be constructed and operated at a central location in the proposed Project area. The treatment/blending facility would treat, blend, and disinfect raw water from the extraction wells before delivering it into a large diameter transmission pipeline in the potable water system for conveyance to other parts of EMWD's service area. The location of the treatment and blending facility has not been finalized. Instead, EMWD has identified three potential sites for the treatment facility (see **Figure 2-2**). The treatment facility would remove PCE, treat nitrate, and blend with Metropolitan Water District of Southern California (MWD) water for elevated levels of aluminum, fluoride, manganese and TDS. The treatment/blending facility would include granular activated carbon (GAC) contactors, a blending facility, a potable water distribution pump station and a chlorine residual injection system. A nitrate treatment system may also need to be constructed at the centralized treatment facility site to be used when blend water of sufficient quality is not available. If required, the nitrate treatment system would be contained fully on the treatment facility site. The treatment facility would contain a chemical storage room within the CMU booster pump station building. The chemical storage room would house the onsite sodium hypochlorite generation system and storage of Liquid Ammonium Sulfate (LAS). The final, permanent footprint of the treatment facility structures would be approximately 20,000 square feet and the height would be approximately two stories. An overview of the proposed treatment facility is shown in **Figure 2-3**.

There are two options for disposal of regenerant waste (brine) brackish or backwash water from the treatment and blending facility. The concentration of the brine is expected to be 12 percent sodium chloride solution, or approximately 120,000 mg/L of TDS. Under the first option, there would be approximately 100 linear feet of 12-inch pipe to discharge the brackish or backwash water from the central treatment and blending facility to the sanitary sewer system. Under the second option, the brine would be hauled to a collection facility for disposal into the Inland Empire Brine Line (IEBL), approximately 24 miles away. The treatment facility would generate approximately 6,500 gallons per day (gpd; average of approximately 4.5 gpm) of brackish or backwash water. Brine wastewater would be stored onsite until approximately 30,000 gallons accumulates. Then, it would be hauled to the IEBL collection facility in five 6,000-gallon capacity tanker trucks. Under this option for disposal, approximately five tanker trucks would haul brine wastewater to the IEBL every four to five days.

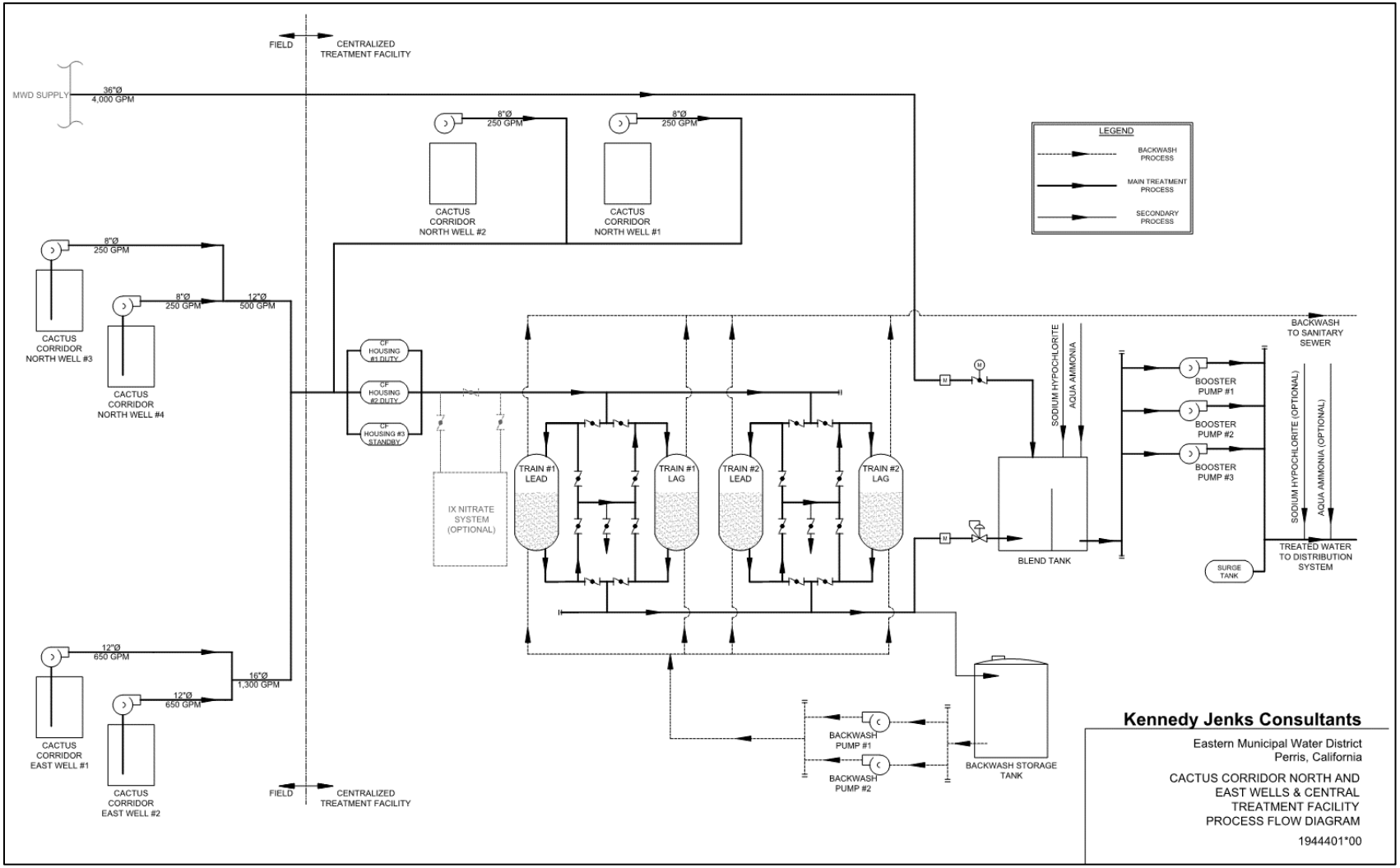

Figure 2-3: Treatment Facility Overview

All stormwater that occurs on the site would be collected as runoff and conveyed and discharged to the street in accordance with applicable storm water drainage design and water quality control requirements. To attenuate noise, all large equipment, including the well and potable water booster pumps, would be housed within a CMU building. In addition, a six-foot CMU perimeter wall would also be installed around the treatment facility site. For security purposes, appropriate site and flood lighting would be installed, with switches, spaced evenly across the treatment facility site. The treatment facility site would be constructed with two access driveways. The front driveway would be constructed with a 24-foot wide rolling gate and the rear driveway would be constructed with a 24-foot wide swing gate.

Treatment Facility Construction

Construction of the treatment facility would occur in a single phase lasting 18 months. Construction of the treatment facility would require the estimated equipment fleet shown in **Table 2-3**.

Table 2-3: Construction Vehicle Fleet for Treatment Facility

Equipment	Number Required for Treatment facility
Backhoe/Loader	2
Excavator	2
Forklift	2
Concrete Pumper	1
Crane	1
Utility Truck	1
Water Truck	1
Welder	1
Compressor	1
Pump	1
Pick-up Trucks	2
Generator	1

During construction, it is assumed that 100 percent of the treatment facility site would be disturbed to allow for staging and storage during construction. The treatment facility site would be excavated to a depth of 10 feet to accommodate footings, piping, a partially below-grade basin, well discharge pond, over excavation and re-compaction. Approximately 50 percent of the material would be reused on site as fill, thus approximately 4,000 cy of material would be exported.

Operations

Once construction is complete, the treatment facility would involve energy use as described in **Table 2-4**. A connection for a portable standby generator would be provided for emergency use.

Table 2-4: Treatment Facility Energy Consumption

Facility Description	Qty	hp	hrs/day	kWh/day
Potable Water Booster Pumps	2+1 standby	150-175	12	2,600-3,200
Backwash Booster Pumps	1+1 standby	25-30	3	55-70
Air Compressor	1	5	12	45
Blend Tank Mixer	1	5	12	45

Ongoing O&M activities would involve bi-weekly visits by an EMWD operator to verify the integrity of the treatment system and inspect the onsite infrastructure. Routine maintenance would be conducted monthly on the equipment and instrumentation. GAC Media replacement is expected to be annually. Delivery for each chemical can be expected once a month (salt and aqueous ammonia). If the IEBL is the chosen method of brine waste disposal, approximately five 6,000 gallon tanker trucks would haul brine wastewater to the IEBL collection point approximately 24 miles from the proposed treatment facility every four to five days.

2.6.3 Pipelines

Approximately 32,600 linear feet of pipeline would be constructed to convey raw water from the extraction wells to the proposed treatment facility, and to convey treated water from the treatment facility to the distribution system. These pipelines would be located primarily within easements, roadway rights of way, and EMWD owned land. Depending on which options are chosen for the well and treatment facility sites (see **Figure 2-2**), the raw water pipeline would be constructed either along Kitching Street (Option 1) or along Perris Boulevard (Alternative alignment). If the Option 1 Raw Water Pipeline alignment is constructed, there would be 29,350 linear feet of pipe to convey raw water from the extraction wells to the treatment and blending facility. If the Alternative Raw Water Pipeline alignment is selected, there would be 27,800 linear feet. The raw water pipeline would vary in diameter from 8-, 12-, 16-, or 24-inch. Approximately 500 linear feet of 36-inch pipeline would be constructed between the proposed treatment facility and a lateral off EMWD's Cactus II Feeder transmission pipeline. The Cactus II Feeder pipeline conveys MWD water to EMWD's potable system and is not a part of this Project; however, the proposed 500-linear feet of 36-inch pipeline from the Cactus II Feeder lateral to the proposed treatment facility is a part of the proposed Project, and would provide the MWD blend water to dilute the water treated from the extraction wells before discharge into the EMWD distribution system.

Depending on which site is chosen for the treatment and blending facility, there would be up to 2,650 linear feet of 36-inch pipeline to convey treated water from the treatment and blending facility to the distribution system. If the treatment facility is sited at Option 1 on Perris Boulevard between Cottonwood Avenue and Bay Avenue, approximately 100 feet of treated water pipeline would be constructed. If the treatment facility is sited at Option 2 on the southeast corner of Kitching Street and Alessandro Boulevard, approximately 2,650 linear feet of treated water pipeline would be constructed. If the treatment facility is sited at Option 3 on Santiago Drive between Perris Boulevard and Patricia Street,

approximately 1,000 linear feet of treated water pipeline would be constructed. The treated water pipelines would be up to 36-inches in diameter.

If the option for disposal of the regenerant waste (brine) to the sanitary sewer system is selected, there would be approximately 100 linear feet of 12-inch pipe to discharge the brackish or backwash water from the central treatment and blending facility to the sanitary sewer system. Approximately 6,500 gpd (4.5 gpm average) of brine waste would be generated from the proposed treatment operations and the concentration of the brine would be 12 percent sodium chloride solution, or approximately 120,000 mg/L of TDS.

Pipeline Construction

Pipelines would be constructed in existing roadways using an open cut method, except at crossings of existing facilities, utilities, and storm channels. Pipelines installed using open cut methods would include a typical trenching depth of 7 feet. The estimated trench width would be equal to 2 feet plus the pipeline diameter, for a width of up to 5 feet. When trenchless techniques are required, pipelines would be constructed using “bore and jack” methods. “Bore and Jack” employs a non-steerable system that drives an open-ended pipe laterally using a percussive hammer, thereby resulting in the displacement of soil limited to the wall thickness of the pipe. For this construction method, pits would be dug on either side of the surface feature to be avoided (e. g. storm channel or existing utilities). The pits are typically 10-15 feet wide and 10-20 feet long for the receiving pit and up to 50 feet long for the jacking pit. The depth would depend on the feature to be avoided. At utility crossings, the depth is estimated to be 15 feet; however, for the purposes of this analysis, it is assumed bore and jack depth could be up to 40 feet. The boring equipment and pipe would be lowered into the pit and aligned at the appropriate depth and angle to achieve the desired exit location. A compressor would supply air to the pneumatic ramming tool to thrust the pipe forward. A cutting shoe may be welded to the front of the lead pipe to help reduce friction and cut through the soil. Depending on the size of the installation, spoil from inside the pipe would be removed with an auger, compressed air, water, or a combination of techniques. A seal cap would be installed on the starter pit side of the installation and spoil would be discharged into the receiver pit. Using this technique, ground surface disturbance would not occur, except at the pits.

Construction of the pipelines would occur in four phases: trenching; pipe installation and backfill; testing; and pavement restoration. The pipelines would be constructed at an average rate of 150 linear feet per day, depending on the pipe size being installed on a given day, extent of the existing utilities and traffic control, and permitted work hours. Therefore, the total duration of construction of the pipelines is estimated to last approximately 10 months. Construction of the pipelines would require the estimated construction equipment shown in Table 2-5.

Table 2-5: Construction Vehicle Fleet for Pipelines

Equipment	Number Required for Pipelines
Backhoe/Loader	1
Hydraulic Excavator	1
Crane	1
Utility Truck	1
Auger Boring Machine	1
Water Truck	1
Welder	1
Compressor	1
Pump	1
Pick-up Trucks	2
Dump Truck	2
Concrete Saw	1
Pavement Breaker	1
Sweeper	1
Paver	1
Generator	1

Approximately 35 percent of the excavated material would be re-used onsite as fill during the pavement restoration phase. Import material would be required for the pipe zone and the pavement section. Thus, the total estimated volume of material export from construction of the pipelines is estimated to be 22,500 cy. After construction is complete, all pipeline construction areas would be restored to pre-construction conditions (i.e., no permanent disturbance footprint).

Operations

The pipelines would not be associated with long-term energy usage or additional EMWD O&M activities. The anticipated volume of raw water to be conveyed in the pipelines once they are complete would depend on the actual well flow and is estimated at 250 to 2,300 gpm.

2.6.4 Construction Schedule

In total, construction of the Project is estimated to take 22 months, with anticipated commencement in July 2021 and completion in March 2023. Construction of all three Project components (wells, pipelines and treatment facility) is expected to occur simultaneously.

2.6.5 Equipment Staging Areas

The treatment facility site would be utilized as the main equipment storage/staging area for the Project. To accommodate construction equipment, the treatment facility site would contain a paved access road and the rest of the site would be installed with a layer of crushed rock. If the Option #1 Treatment Facility site is selected, it may not be large enough to accommodate all of the equipment storage/staging for the proposed Project

due to simultaneous construction of the Cactus II Feeder Turnout 2. If the treatment facility site cannot accommodate all equipment storage/staging for the proposed Project, other existing EMWD property would be utilized as necessary for staging and intermediate storage for the installation of the water pipelines, or the contractor would be responsible for securing suitable temporary equipment storage/staging site(s) prior to construction and implementing applicable environmental commitments (see *Section 2.7*) at the staging area(s).

2.7 Environmental Commitments

The following measures are EMWD construction best management practices (BMPs) that would be implemented as part of the project:

- Temporary sound walls would be required for well drilling construction due to 24-hour operation of the drilling rig for noise control
- Block wall buildings would be designed and constructed for the well facilities and treatment/blending facilities for noise control, aesthetics (to blend in with surrounding aesthetics and buildings) and for security purposes
- The chlorination facilities would use onsite sodium hypochlorite generation or bulk sodium hypochlorite (chlorine bleach) to minimize the use of hazardous materials
- Permanent exterior security lighting would be shielded downward to avoid light spill onto surrounding properties
- The design and construction of the facilities would be based on a soils report and geotechnical investigation to minimize geological risk
- Groundwater encountered during construction would be discharged to land or the storm drain in accordance with applicable permits or discharged to EMWD's sewer for treatment and reuse
- All construction work within public roadways would require the contractor to prepare and implement a traffic control plan
- All construction work would require the contractor to implement fire hazard reduction measures, such as having fire extinguishers located onsite, use of spark arrestors on equipment and using a spotter during welding activities
- Construction would comply with SCAQMD Rule 403 Fugitive Dust Control requirements
- Specifications would require the contractor to prepare a Stormwater Pollution Prevention Plan (SWPPP). Construction would implement BMPs to control water quality of stormwater discharges offsite, according to the SWPPP, such as site management "housekeeping," erosion control, sediment control, tracking control and wind erosion control.

2.8 Required Permits and Approvals

Anticipated permits are identified in **Table 2-6**. South Coast Air Quality Management District permits for new stationary sources may be required if emergency generators are installed at the wells and treatment facility.

Table 2-6: Permits and Approvals

Agency	Permit/Approval
City of Moreno Valley	Encroachment Permit
South Coast Air Quality Management District	Permit to Construct, Permit to Operate, Dust Control Permits
Riverside County Flood Control and Water Conservation District	Encroachment Permit
California Division of Drinking Water	Amended Water Supply Permit
Riverside County Department of Environmental Health	Well Drilling Permit
State Water Resources Control Board	NPDES Construction General Permit for Storm Water Discharges
Regional Water Quality Control Board	NPDES permit for dewatering and test water discharges during construction

3. ENVIRONMENTAL CHECKLIST FORM

1. **Project title:** Cactus Avenue Corridor Groundwater Wells Project

2. **Lead agency name and address:** Eastern Municipal Water District
2270 Trumble Road
P.O. Box 8300
Perris, CA 92572-8300

3. **Contact person and phone number:** Joseph Broadhead,
Principal Water Resources Specialist
broadhej@emwd
(951) 928-3777 ext. 4545

4. **Project location:** City of Moreno Valley,
Riverside County, California

5. **Project sponsor's name and address:** Same as Lead Agency

6. **General plan designations:** Commercial, Office, Open Space, Residential/Office, Public Facilities

7. **Zoning:** Neighborhood Commercial, Open Space/Park, Office, Public Facilities

8. **Description of project:** The Cactus Avenue Corridor Groundwater Wells Project consists of development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The Project includes construction and operation of extraction wells, raw water pipelines, a water treatment and blending facility, and treated water pipelines. Up to four extraction wells (each approximately 250 gpm) would be constructed in the North Sub-Area and up to two extraction wells (each approximately 650 gpm) would be constructed in the East Sub-Area. The treatment facility would be constructed and operated at a central location that would include GAC contactors, a blending facility, potable water distribution pump station, a chlorine residual injection system, and nitrate treatment facilities. The treated water from the extraction wells would be blended with imported water from MWD to drinking water standards and then delivered to a transmission pipeline in the potable water system that would convey the water to other parts of EMWD's service area. The water would be disinfected prior to discharging into the potable water system.

9. **Surrounding land uses and setting:** The Project sites are located throughout the City of Moreno Valley. The Project area setting is generally built-out. Surrounding land uses include single-family residential, multi-family residential, schools, churches, libraries, neighborhood commercial, office, public facilities, and open

space/park. There are several storm channels in the Project area, including one along Kitching Street, one that crosses Cottonwood Avenue to the intersection of Heacock Street and Alessandro Boulevard, and one that borders Camino Flores.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

- City of Moreno Valley: Encroachment Permit
- Riverside County Flood Control and Water Conservation District: Encroachment Permit
- California Division of Drinking Water: Amended Water Supply Permit
- Riverside County Department of Environmental Health: Well Drilling Permit
- State Water Resources Control Board: NPDES Construction General Permit for Storm Water Discharges
- Regional Water Quality Control Board: NPDES Permit for Groundwater Dewatering and NPDES Permit for Discharge of Well Test Water

11. Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 2180.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

EMWD has consulted with Native American tribal representatives through written correspondence, based on a contact list of tribes who indicated to EMWD that they are interested in receiving notification. Additionally, EMWD staff has undertaken consultation with representatives from the Morongo Band of Mission Indians, Pechanga Band of Luiseño Indians, Soboba Band of Luiseño Indians, Rincon Band of Luiseño Indians and Agua Caliente Band of Cahuilla Indians to discuss the Project and potential effects no significant cultural resources.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial evaluation:

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

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

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

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

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

Signature	3/9/2020 Date
ALFRED JAUREN Printed Name	DIR. OF EKC For

3.1 Aesthetics

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

Discussion

The City of Moreno Valley occupies a flat valley floor that is surrounded by mountains and hills. The primary scenic views, as defined by the City of Moreno Valley and County of Riverside, near the Project area are the foothills and mountains located around the northern, eastern, and southern edges of Moreno Valley, including the Box Spring Mountains 2.3 miles north, the Badlands foothills 2.5 miles east, and the mountains of Lake Perris State Recreation Area 0.9 miles southeast (City of Moreno Valley 2006b;

County of Riverside 2017b). In its General Plan, the City of Moreno Valley describes the importance of maintaining a natural setting in rural and remotes areas, including the hills and mountains that surround the City, to preserve the scenic quality of the region (Moreno Valley, 2006b).

As shown in the photographs of the existing conditions of the site (*Section 2.5.8, Existing Site Conditions*), the well and treatment facility sites are disturbed and surrounded by development. The Project area would not be considered rural and remote. As shown in photos 2, 3, 4, 6, 7, and 8, views of surrounding mountains and hills are visible from the proposed Project sites; however, the views are partially obstructed by the existing, surrounding development.

The City of Moreno Valley prioritizes preserving the scenic quality of the region. The City of Moreno Valley Municipal Code contains guidelines for aesthetic quality and visual character. These guidelines provide the City's policy with respect to the quality of design expected for all projects (City of Moreno Valley, n.d.a). The City Municipal Code (Chapter 9.16 Design Guidelines) requires new developments to match and blend in with their surrounding environment and neighboring buildings. Municipal Code Section 9.16.120 states the building design shall respect the view of existing developments, building mass and scale shall be proportionate to the surrounding open spaces and developments, building walls shall be light colored, building accents shall contrast with the main building color, bricks shall be left unpainted, and the color scheme shall be simple.

The City of Moreno Valley Municipal Code Section 9.16.280 provides guidelines for proposed lighting with the purpose of reducing unnecessary light pollution and maintaining dark skies, while promoting safety and aesthetics. This Section of the Municipal Code states that light and glare should not be unnecessarily deflected onto surrounding properties; high-intensity security lighting fixtures should be concealed by landscaping or building architectural elements; and lighting fixtures placed lower than five feet in height should not produce glare.

Riverside County Ordinance Number 655 regulates light pollution by restricting the permitted use of certain outdoor light fixtures that emit light into the night sky which have a detrimental effect on astronomical observation and research. It defines various zones relative to the distance between the light source and Palomar Observatory and sets requirements for shielding for various types of outdoor lighting (e.g., decorative, parking lots, walkways, security) (County of Riverside 1988).

The State of California Department of Transportation (Caltrans) manages the State Scenic Highway Program (Caltrans, n.d.), which was created by the State Legislature in 1963 with the purpose of protecting the natural scenic beauty of California highways. State-designated scenic highways have locally adopted policies to preserve the scenic quality of the corridor. Highways receive designation based on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view. The nearest

State-designated scenic highway is State Route 243, approximately 20 miles east of the Project area (Caltrans 2019). Ramona Expressway, three miles south of the Project area, is a County-eligible scenic highway, but is not designated as a State scenic highway (County of Riverside 2017).

a) Less than Significant

The primary scenic impairments associated with the Project would be temporary and would occur during the construction phase. Once the Project is completed, pipelines would be underground and the area of temporary disturbance would be restored to its original condition, thus having no long-term impact on scenic vistas. The well housing and treatment facility have the potential to result in long-term impacts on scenic vistas. However, the proposed permanent structures would be of similar height as buildings and structures in the Project area that, as shown in the photographs in *Section 2.5.8 Existing Site Conditions*, already partially obstruct scenic vistas from the sites. For example, two-story single-family homes near the Project sites can be up to 35 feet in height (City of Moreno Valley Municipal Code Section 9.03.040) and commercial buildings can be up to 30 feet tall, or higher if they accommodate additional building setbacks (City of Moreno Valley Municipal Code Section 09.04.040). The proposed well housing would be 15 feet and the treatment/blending facility would be no higher than a two-story structure.

During construction, scenic vistas near the Project sites would be temporarily altered by the construction equipment such as cranes and excavators. However, once construction is complete, the treatment facility and extraction wellhouses would be consistent in height to the surrounding, existing commercial and residential buildings that currently obstruct scenic vistas at the Project sites. Therefore, the Project would not substantially adversely impact local scenic vistas of surrounding foothills and mountains, and impacts would be less than significant.

b) No Impact

None of the potential well or treatment sites are located within the viewshed of a State scenic highway. Therefore, there would be no impact no scenic resources associated with a State scenic highway.

c) Less than Significant with Mitigation Incorporated

The Project sites are located within built-out areas of Moreno Valley. The City's policies governing scenic quality for new development are described under *Discussion*, above, and are intended to promote development that blends in with its surrounding environments and matches the aesthetics of neighboring buildings. EMWD, as a public agency, is not subject to other jurisdictional agencies' established standards or ordinances. Nonetheless, as explained under *Section 2.7 Environmental Commitments*, buildings would be designed and constructed for the well facilities and the treatment/blending facility to match surrounding buildings.

Public views in the Project area include those from roadways and from public parks and schools. Three parks have been included as optional sites for wells: Bayside Park, Victoriano Park, and Parque Amistad. Cactus Corridor Well 4 Option 2/Treatment Site Option 2 is located adjacent to Hendrick Ranch Elementary School and Cactus Corridor East Well 2 Option 1 is located adjacent to Victoriano Elementary School. Public views of the Project from roadways would be fleeting – on the order of seconds or minutes – while public views of the Project from parks and schools would be longer lasting.

Construction activities would temporarily impact the visual character and quality of the Project sites. However, once construction is complete all construction related visual impacts would be removed. The pipelines would be constructed underground within existing roadways and therefore would not permanently impact the visual quality of the area.

The aboveground extraction wells and treatment/blending facility would be visible from public vantage points of the Project sites. In accordance with the Environmental Commitments explained in *Section 2.7 Environmental Commitments*, the wells and treatment/blending facilities would be housed in structures that would conform to the surrounding aesthetic character. Additionally, the extraction well siting criteria (see *Section 2.4 Project Siting Criteria*) would ensure that optional well sites are not selected for construction if the well would substantially impact existing features and visual characteristics of the neighborhood parks. Nonetheless, to ensure these measures are implemented, **Mitigation Measure AES-1** would require that all permanent Project structures are designed to be consistent with the existing visual character of their surroundings. Therefore, Project impacts on visual character and public views would be less than significant with mitigation incorporated.

d) Less than Significant with Mitigation Incorporated

Most construction activities for the Project would occur during the day and not require lighting. Well construction would require up to two weeks of continuous drilling and additional nighttime construction activities over the following 12 weeks. Well drilling requires drill operation for 24 hours/day to prevent borehole collapse. During these nighttime construction activities, lights would be required for construction and security. Once construction is complete, permanent exterior security lights would be required but would be shielded downward to avoid light spillage onto surrounding properties. All nighttime lighting must conform to the Mount Palomar Nighttime Lighting Policy because the Project area is within the 45-mile zone radius of the Palomar Observatory and must comply with Zone B regulations. **Mitigation Measure AES-2** and **Mitigation Measure AES-3** would ensure all nighttime construction lighting and operational lighting would be shielded and directed downward to minimize impacts on neighboring residents and areas in accordance with Riverside County Ordinance No. 655. With incorporation of mitigation measures, impacts would be less than significant.

Mitigation Measures:

AES-1: Design of Aboveground Structures. To minimize visual impacts on public views, permanent, aboveground structures (treatment/blending facility, extraction well houses) shall be designed to blend into the existing visual character of their surroundings, including building and wall height, color, and exterior architectural treatments.

AES-2: Low Illumination Nighttime Construction Lighting. All nighttime construction lighting shall be of the lowest illumination necessary for Project construction, attached to motion sensors, and shielded and directed downward to avoid light spillage onto neighboring properties.

AES-3: Lighting Fixtures. All permanent nighttime lighting and fixtures shall comply with Riverside County Ordinance No. 655 for Zone B of the Mount Palomar Nighttime Lighting Policy Area.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	[ ]	[ ]	[X]	[ ]
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	[ ]	[ ]	[ ]	[X]
c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by	[ ]	[ ]	[ ]	[X]

Government Code Section 51104(g))?				
d) Result in the loss of forest land or conversion of forest land to non-forest use?	[ ]	[ ]	[ ]	[X]
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	[ ]	[ ]	[X]	[ ]

Discussion

The Project area is designated primarily as Urban and Built-Up Land by the California Department of Conservation (CDOC) Farmland Mapping and Monitoring Program (FMMP) (CDOC 2016). There are scattered parcels in or near the Project area that are designated as Farmland of Local Importance. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the Project area (CDOC 2016). There are no Williamson Act contracts within the City of Moreno Valley (City of Moreno Valley 2006a). There are no parcels zoned for agricultural use in the Project area. The City of Moreno Valley does not employ zoning designations related to agricultural uses. According to the City's municipal code, agricultural uses (crops only) are permitted in any zoning designation (City of Moreno Valley n.d.a). Agricultural uses involving structures are limited to areas zoned for industrial use; no industrial areas fall within the Project area. There is no designated forest land or timberland within the City of Moreno Valley (City of Moreno Valley 2006a; City of Moreno Valley 2019a).

a) Less Than Significant Impact

None of the potential Project sites (well sites, treatment facility sites, or pipeline alignments) are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The treatment facility site option at Alessandro Boulevard and Kitching Street is designated as Farmland of Local Importance (CDOC 2016), which is a classification given to land that is important to the local agricultural economy, as determined by each county. Unlike the Prime Farmland, Unique Farmland, and Farmland of Statewide Importance designations, Farmland of Local Importance has not been identified under the FMMP as having physical and chemical features (e.g., soil quality, growing season, and moisture supply) necessary for production of the State's leading agricultural crops. In Riverside County, Farmland of Local Importance includes soils that could be classified as Prime and Statewide but lack available irrigation water; and lands producing major crops for Riverside County, including pasture, summer squash, okra, eggplant, radishes, and watermelons (CDOC 2017). The Alessandro Boulevard and Kitching Street site is not currently used for agriculture; land cover at the site consists of

bare dirt or grass, depending on the season. The potential pipeline alignment along Perris Boulevard would pass by land designated as Farmland of Local Importance; however, the pipeline would be located entirely within the existing roadway right-of-way. Furthermore, the land designated as Farmland of Local Importance on Perris Boulevard is not currently used for agriculture. The proposed Project would not convert farmland to non-agricultural use; therefore, the impact would be less than significant.

b) No Impact

None of the proposed well sites, treatment facility sites, or pipeline alignments are located on land zoned for agricultural use or protected by a Williamson Act Contract (City of Moreno Valley 2019a; City of Moreno Valley n.d.a). Therefore, no impact would occur as a result of the proposed Project.

c) No Impact

There is no land zoned for forest land or timberland within the City of Moreno Valley; therefore, the proposed Project would have no impact.

d) No Impact

There is no designated forest land or timberland within the City of Moreno Valley. The Project site options are either vacant or landscaped with grass and landscaping trees. There are no forestry or timberland resources at any of the Project sites. Therefore, the proposed Project would have no impact related to the loss of forest land or timberland.

e) Less Than Significant Impact

The proposed Project would extract groundwater from the Perris North Sub-Basin, which has the potential to affect groundwater levels of private wells in the Perris North Basin that may be used for agricultural irrigation. EMWD has been tracking groundwater use in the area since the mid-1990s as part of the Annual West San Jacinto Groundwater Management Plan report. In the Perris North Sub-Basin, a small portion of the land is dedicated to farming, but that proportion has been declining – and is expected to continue to decline – due to urbanization and growth, primarily of residential land use. Of the portion of land dedicated to agricultural production, much of it is irrigated with recycled water. Little to no private production occurs in the Basin due to groundwater contamination. About 30 private wells are active in the Perris North Sub-Basin, most of which are used for irrigation purposes, including agricultural, landscaping, and recreation (e.g., golf courses). Water levels were drawn down to historic lows in the middle of the 20th century and have been slowly rising since that time. The reasons for the rise are currently being studied; however, factors include: increased sales of EMWD recycled and municipal water; reduced groundwater extraction, primarily due to less agricultural water use; incidental recharge from EMWD recycled water facilities; and, for the portions of the Perris North Sub-Basin downstream of Lake Perris, seepage from Lake Perris.

The proposed groundwater extraction would be conducted in a manner consistent with the EMWD Groundwater Sustainability Plan (GSP), which is currently under development with an implementation date of January 2022. The GSP is being prepared pursuant to the Sustainable Groundwater Management Act (SGMA), which requires that groundwater extraction achieve sustainable levels by 2042, within 20 years of plan adoption. This would ensure sustainable use of groundwater supplies. Therefore, the proposed Project would not substantially decrease the groundwater supplies and would not impede the ability of farmers to pump groundwater for irrigation use if needed. The Project would not induce other changes in the environment that would result in conversion of agricultural land to non-agricultural use. The proposed Project would have a less-than-significant impact.

Mitigation Measures: None required or recommended.

3.3 Air Quality

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	[ ]	[ ]	[X]	[ ]
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non- attainment under an applicable federal or state ambient air quality standard?	[ ]	[X]	[ ]	[ ]
c) Expose sensitive receptors to substantial pollutant concentrations?	[ ]	[X]	[ ]	[ ]
d) Result in other emissions (such as those leading to odors or adversely affecting a substantial number of people?	[ ]	[ ]	[X]	[ ]

Discussion

The City of Moreno Valley and EMWD service area are within Riverside County and bounded by the City of Riverside to the west, the City of Perris to the south, and

unincorporated Riverside County on the remaining boundaries. The Project area is located within the SCAB, which is within the SCAQMD. The SCAQMD monitors air pollutant levels to ensure the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are met and, if they are not met, to develop strategies to meet the standards. Air pollution in the Project area is monitored at stations located in Perris, Redlands, and Banning, located approximately nine, ten, and 19, miles from the Project area, respectively.

The NAAQS, which are required to be set by the United States Environmental Protection Agency (EPA) under the CAA, provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly (EPA 2019). Similarly, the CAAQS are established to protect the health of the most sensitive groups and are mandated by State law. EPA has set NAAQS for six pollutants, which are called "criteria pollutants:" Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), Ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). In addition to these, California has added three additional criteria pollutants: Hydrogen Sulfide (H_2S), Visibility Reducing Particles, and Vinyl Chloride. In addition, California regulates about 200 different chemicals, referred to as toxic air contaminants (TACs) (CARB 2019a).

Depending on whether or not the NAAQS or CAAQS are met or exceeded, the SCAB is classified as being in "attainment" or "nonattainment." The 2016 Air Quality Management Plan (AQMP; SCAQMD 2017) assesses the attainment status of the SCAB and is summarized in **Table 3-1**. As shown therein, the SCAB is in nonattainment for the State 1-Hour Ozone, 8-Hour Ozone, PM_{10}-24 hour, PM_{10}-Annual, and $PM_{2.5}$-Annual requirements and the Federal 1-hour Ozone, 8-Hour Ozone, $PM_{2.5}$-24 hour, $PM_{2.5}$-Annual, and lead requirements. Thus, the SCAB is required to implement strategies that would reduce pollutant levels to recognized standards, which is done through the Clean Communities Plan (formerly known as the Air Toxics Control Plan). The Clean Communities Plan is designed to examine the overall direction of the SCAQMD's air toxics control program and includes control strategies aimed to reduce toxic emission.

Table 3-1: Criteria Pollutant Attainment Status – SCAB

Criteria Pollutant	State CAAQS	Federal (NAAQS)
1-Hour Ozone	Nonattainment	Nonattainment (Extreme)
8-Hour Ozone	Nonattainment	Nonattainment (Extreme)
CO	Attainment	Attainment (Maintenance)
NO_2	Attainment	Attainment (Maintenance)
SO_2	Attainment	Attainment
PM10 – 24 hour	Nonattainment	Attainment (Maintenance)
PM10 – Annual	Nonattainment	No Criteria Defined
PM2.5 – 24 hour	No Criteria Defined	Nonattainment (Serious)
PM2.5 - Annual	Nonattainment	Nonattainment (Serious)
Lead	No Criteria Defined	Nonattainment (partial)
Hydrogen Sulfide (H_2S)	Attainment	No Criteria Defined
Sulfates	Attainment	No Criteria Defined
Vinyl Chloride	Attainment	No Criteria Defined

Source: SCAQMD 2018

The SCAQMD provides numerical thresholds to analyze the significance of a project's construction and operational emissions on regional air quality. These thresholds are designed such that a project consistent with the thresholds would not have an individually or cumulatively significant impact on the SCAB's air quality. These thresholds are listed in **Table 3-2**.

Table 3-2: SCAQMD Air Quality Significance Thresholds

Pollutant	Mass Thresholds – Construction Thresholds (pounds/day)	Mass Thresholds – Operation Thresholds (pounds/day)
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3
TACs	• Maximum Incremental Cancer Risk $\geq$ 10 in 1 million • Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million) • Chronic $ Acute Hazard Index $\geq$ 1.0 (project increment)	• Maximum Incremental Cancer Risk > 10 in 1 million • Cancer Burden > 0.5 excess cancer cases (in areas > 1 in 1 million) • Chronic $ Acute Hazard Index > 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	Project creates an odor nuisance pursuant to SCAQMD Rule 402

Source: SCAQMD 2019

In addition, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs have been developed for nitrogen oxides (NO_X), CO, PM10 and PM2.5. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area, distance to the sensitive receptor, and project size. LSTs only apply to emissions within a fixed stationary location; they are not applicable to mobile sources. The use of LSTs is voluntary, to be implemented at the discretion of local agencies (SCAQMD 2008).

The SCAQMD LSTs are defined for 37 source receptor areas (SRAs). The Project site is located in source receptor area 24 (SRA-24), Moreno Valley (SCAQMD 2008). LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for sites that measure up to one, two, or five acres. The Project has several individual sites ranging in size from approximately one-half to eight acres. During construction, it is assumed that the entire well and treatment facility parcels would be temporarily disturbed for the purposes of this analysis, with the exception of the site options at Bayside, Victoriano, and Parque Amistad parks. The proposed Project also includes the construction of pipelines, which would proceed at a rate of approximately 150 linear feet of pipeline per day, which is equivalent to an active construction site less than one-tenth of an acre per day. Pursuant to SCAQMD guidance, LSTs for the one-

acre site should be used for sites that are less than one acre in size. Ground disturbance for the pipelines may exceed the estimated rate of 0.1 acre per day occasionally; however, the area under active construction at any given time for the pipeline would not be expected to exceed the one-acre limit set in the LST lookup table. LSTs for construction on one-acre and five-acre sites in SRA-24 are shown in **Table 3-3**. LSTs are provided for receptors at a distance of 25 meters (82 feet) from the Project site boundary, which is the most conservative LST distance (LSTs range from 25 to 500 meters).

Table 3-3: SCAQMD LSTs for Construction and Operation

Pollutant	Allowable emission from a one-acre site in SRA-24 for a receptor within 25 meters, or 82 feet (pounds/day)	Allowable emission from a five-acre site in SRA-24 for a receptor within 25 meters, or 82 feet (pounds/day)
Gradual Conversion of NO_x to NO_2	118	270
CO	602	1,577
PM10 – operation	1	4
PM10 – construction	4	13
PM2.5 – operation	1	2
PM2.5 – construction	3	8

Source: SCAQMD 2009

General Conformity with state implementation plans is a national (CAA) regulation that applies to most federal actions. For DWSRF funded projects, a CAA General Conformity analysis applies only to projects in a nonattainment area or an attainment area subject to a maintenance plan. It is only required for criteria pollutants for which an area has been designated nonattainment or maintenance. The General Conformity Rule ensures that actions taken by federal agencies in nonattainment and maintenance areas do not interfere with the State's plans to meet NAAQS. 40 CFR Part 93.153 defines de minimis levels, which are the minimum threshold for which a conformity determination must be performed. If the proposed Project's annual emissions from construction and/or operation are below the applicable de minimis levels, the Project is not subject to a General Conformity determination.

Based on the federal attainment statuses for the SCAB, the de minimis levels that apply to the SCAB are listed in **Table 3-4**. These levels apply to all direct and indirect annual emissions generated during construction and operation of the Project.

Table 3-4: General Conformity De Minimis Emission Rates for the South Coast Air Basin

Pollutant	SCAB NAAQS Attainment Status Designation	De Minimis Emission Rate (tons/year)
1-Hour Ozone	Extreme Nonattainment	10
8-Hour Ozone	Extreme Nonattainment	10
CO	Maintenance	100
NO_2	Maintenance	100
PM_{10}	Maintenance	100

Pollutant	SCAB NAAQS Attainment Status Designation	De Minimis Emission Rate (tons/year)
$PM_{2.5}$	Serious Nonattainment	70
Lead	Partial Nonattainment	25

Source: EPA 2020

a) Less than Significant Impact

The SCAQMD's 2016 AQMP, which assesses the attainment status of the Moreno Valley and EMWD area of the SCAB and provides a strategy for attainment of State and federal air quality standards, is the applicable air quality plan. The AQMP strategies are developed based on population, housing, and employment growth forecasts anticipated under local city general plans and the Southern California Association of Governments' (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (SCAG, 2016).

A project would conflict with or obstruct an applicable air quality plan if it would lead to population, housing or employment growth that exceeds the forecasts used in the development of the applicable air quality plan. The proposed Project would construct approximately 32,600 linear feet of pipelines, six groundwater extraction wells, and a treatment/blending facility, which would add to the EMWD water portfolio serving existing customers currently connected to EMWD water, as well as future customers from planned growth in the area. Therefore, the proposed Project would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the AQMP. Potential for conflicts with the AQMP would be less than significant.

b) Less than Significant with Mitigation Incorporated

The proposed Project would result in emissions of criteria pollutants from short-term construction activities and long-term O&M activities. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) 2016.3.2, which was developed by the SCAQMD and is used throughout California to quantify criteria pollutants and greenhouse gas emissions (GHGs).

The CalEEMod emissions scenarios were based on Project-specific information, found in *Section 2 Project Description*. In instances where Project-specific information was not available (e.g. construction equipment horsepower, length of worker trips, soil moisture content), the analysis relied on CalEEMod default values for construction activities. As explained in *Section 2 Project Description*, it is assumed that construction of all Project components (pipelines, wells, treatment/blending facility) would begin at the same time in July 2021 and occur simultaneously. SCAQMD's Rule 403 (Fugitive Dust) requires construction projects to implement measures to suppress fugitive dust emissions, such as watering of exposed soils and the preparation of a Fugitive Dust Control Plan. The construction contractor would be required to have a Fugitive Dust Control Plan approved by either the SCAQMD or Riverside County prior to grading or excavation activities.

Construction Emissions

Air emissions of criteria pollutants during construction would result from the use of construction equipment with internal combustion engines, and offsite vehicles to transport workers, deliver materials to the site, and haul export material from the site. Project construction would also result in fugitive dust emissions, which would be lessened through the implementation of the fugitive dust control measures required by SCAQMD rules. **Table 3-5** summarizes the maximum daily pollutant emissions during construction of the proposed Project.

Table 3-5: Proposed Project Maximum Daily Construction Emissions (pounds/day)

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction Equipment	18	139	129	<1	20	13
Offsite emissions	0	4	3	<1	2	<1
Fugitive dust (with required fugitive dust controls)	--	--	--	--	11	6
Total Maximum Daily Emissions	**18**	**143**	**131**	**<1**	**33**	**19**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	**No**	**Yes**	**No**	**No**	**No**	**No**

Note: In CalEEMod, environmental commitments, including measures to control fugitive dust, must be added as "mitigation measures." Therefore, these results reflect the mitigated scenario in the output tables in Appendix A.

As shown in **Table 3-5**, Project construction would not exceed SCAQMD regional thresholds for reactive organic gases (ROG), CO, SO_x, $PM_{2.5}$, or PM_{10}. However, the proposed Project construction would exceed the NO_x threshold. With the implementation of Mitigation Measure **AIR-1**, the use of an engine fleet with 55 percent Tier 4 engines on applicable equipment[1] would reduce the emissions of NO_x. The maximum daily construction emissions with the incorporation of Mitigation Measure **AIR-1** are shown in **Table 3-6**.

Table 3-6: Mitigated Proposed Project Maximum Daily Construction Emissions (pounds/day)

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Construction Equipment	9	94	106	<1	4	4
Offsite emissions	0	<1	2	<1	2	<1
Fugitive dust (with required fugitive dust controls)	--	--	--	--	0	0
Total Maximum Daily Emissions	**9**	**94**	**108**	**<1**	**6**	**4**

[1] Note that drill rigs with a Tier 4 engine may not be available at the time of construction. This analysis did not assume any change in the engine type for drill rigs.

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

The implementation of Mitigation Measure **AIR-1** reduces several criteria pollutants, including NO_x, which would no longer exceed the SCAQMD regional threshold.

Additionally, while the use of LSTs is voluntary, the proposed Project emissions were compared to LSTs for the Project area and are provided in **Table 3-7**. As noted above, LSTs are only applicable to emissions within a fixed, stationary location, such as construction sites, and vary based on project site size. **Table 3-7** provides LSTs that are applicable to each construction phase of the proposed Project, as each phase has a different construction location and footprint. As explained under the *Discussion*, above, SCAQMD provides LST lookup tables for sites that measure up to one, two, or five acres; LSTs for construction sites smaller than one acre should use the one acre threshold.

Table 3-7: Mitigated Proposed Project Maximum Daily Emissions Compared to LSTs (pounds/day)

Emissions Source	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Well Sites	1	11	12	<1	0	0
Well Sites LST (one-acre LST)	*--*	*118*	*602*	*--*	*4*	*3*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Pipeline	1	11	26	<1	0	0
Pipeline LST (one-acre LST)	*--*	*118*	*602*	*--*	*4*	*3*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Treatment facility	4	47	33	<1	2	2
Treatment facility LST (onsite stationary emissions only, five-acre LST)	*--*	*270*	*1,577*	*--*	*13*	*8*
Threshold exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

General Conformity Assessment

Table 3-8 summarizes the proposed Project's maximum unmitigated annual construction emissions and compares those to the applicable de minimis threshold for the SCAB region. As shown in **Table 3-8**, the Project's criteria air pollutant emissions would not exceed the applicable de minimis thresholds. Therefore, the general conformity requirements do not apply to these emissions and the Project is exempt from a conformity determination.

Table 3-8: Maximum Annual Project Construction Emissions Compared to De Minims Thresholds (tons/year)

Emissions Source	Ozone (VOC/ROG)	CO	PM_{10}	$PM_{2.5}$
Construction Emissions	1	10	1	1
De Minimis Threshold	*10*	*100*	*100*	*70*
Threshold Exceeded?	**No**	**No**	**No**	**No**

Operations

Long-term emissions from the proposed Project would result almost exclusively from indirect emissions from electricity consumption in addition to a small amount of mobile and area emissions. CalEEMod only calculates direct emissions of criteria pollutants from energy sources that combust on-site, such as natural gas. The proposed Project does not propose to combust natural gas onsite. Criteria pollutant emissions from power plants are associated with the power plants themselves, which are stationary sources permitted by air districts and/or the EPA, and are subject to local, state and federal control measures. Thus, CalEEMod does not calculate or attribute emissions of criteria pollutants from electricity consumption to individual projects. Criteria pollutants associated with the proposed Project electricity facilities would be permitted stationary sources and would undergo separate permitting procedures that are assumed to result in emissions below the significance thresholds.

Operational emissions of criteria pollutants from mobile and area sources associated with O&M of the proposed Project are included in **Table 3-9**. No SCAQMD mass daily thresholds would be exceed by operation of the proposed Project.

Table 3-9: Maximum Daily Project Operational Emissions Compared to SCAQMD Thresholds

Emissions Source	(NO_x)	(VOC)	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Emissions (pounds/day)	1	<1	1	<1	<1	<1
SCAQMD Mass Daily Threshold (pounds/day)	55	55	550	150	150	55
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

With the implementation of Mitigation Measure **AIR-1**, proposed Project emissions of criteria pollutants would be less than significant.

c) Less than Significant with Mitigation Incorporated

Sensitive receptors are typically defined as schools (preschool–12th grade), hospitals, resident care facilities, senior housing facilities, day care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality (CARB 2018). There are several sensitive receptors near the proposed Project area including: single-family residences, multi-family residences, mobile home parks, Oasis Community Church, day care centers, Armada Elementary School, Chaparral Hills Elementary School, Creekside Elementary School, Hendrick Ranch Elementary School, Ramona Elementary School, March Mountain High School, Victoriano Elementary School, Riverside County Regional Medical Center, and Kaiser Permanente Moreno Valley Medical Center.

LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or State ambient air quality standard at the nearest sensitive receptor. Therefore, projects that conform to the

LSTs are assumed to have a less than significant impact on nearby sensitive receptors. As discussed under "b" above, the proposed Project's construction and operational emissions would not exceed SCAQMD regional thresholds or LSTs with the implementation of Mitigation Measure **AIR-1**. Therefore, with mitigation, sensitive receptors would not be subjected to substantial pollutant concentrations and impacts would be less than significant.

d) Less than Significant Impact

The proposed Project would involve emissions of sulfur compounds from use of oil and diesel fuel during construction, which would potentially result in unpleasant odors. Construction would be temporary and odorous emissions from construction equipment tend to dissipate quickly within short distances from construction sites. Once the proposed Project is operational, the project pipelines, well sites and treatment/blending facility would not be associated with odors. The proposed wells and treatment/blending facilities are not a permanent land use that is typically associated with nuisance odors, such as a landfill or rendering plant (CARB 2005). Impacts would be less than significant.

Mitigation Measures:

Mitigation Measure AIR-1: Tier 4 Engines. EMWD shall use off-road equipment that meets the EPA certified Tier 4 final engines or engines that are certified to meet or exceed the emission ratings for EPA Tier 4 final or interim engines such that average daily NOx emissions are lower than SCAQMD Regional Mass Emissions Thresholds of 100 pounds per day. One way for this to be accomplished would be for 55 percent of the construction equipment and vehicles, with the exception of drill rigs, used for the Project to be equipped with Tier 4 final engines.

3.4 Biological Resources

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

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	[ ]	[ ]	[ ]	[X]
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	[ ]	[ ]	[ ]	[X]
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	[ ]	[ ]	[ ]	[X]
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	[ ]	[ ]	[ ]	[X]
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	[ ]	[X]	[ ]	[ ]

Discussion

A Biological Resources Assessment Report was prepared in February 2020 for the proposed Project. A literature review and field survey were performed to assess the biological resources of the Project area. The complete *Biological Resources Assessment Report* is provided in **Appendix B** and is relied upon for the analysis in this IS/MND.

Regulated or sensitive resources studied and analyzed included special status plant and wildlife species, nesting birds and raptors, wildlife movement, sensitive plant communities, jurisdictional waters and wetlands, and locally protected resources (i.e.

trees). Potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Moreno Valley Municipal Code
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

The literature review was completed to determine the environmental and regulatory setting of the proposed Project. The review included U.S. Department of Agriculture (USDA) *Soil Survey for the Western Riverside Area*, *Riverside East, CA* and *Sunnymead, CA* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles; literature detailing the habitat requirements of subject species; aerial photographs; and topographic maps (**Appendix B**). The Project area is within the boundaries of the Western Riverside County MSHCP. The MSHCP, species accounts, and other reference materials were reviewed for habitat assessment requirements and habitat suitability elements for special status species. The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB), Biogeographic Information and Observation System (BIOS) and U.S. States Fish and Wildlife Service (USFWS) Critical Habitat Portal and Information, Planning, and Consultation (IPaC) system were reviewed to see if any special status wildlife and/or plant or vegetation communities were previously recorded within five miles of the Project area (**Appendix B**). National Wild and Scenic River System maps managed by the U.S. Forestry Service (USFS) were reviewed to determine if wild or scenic rivers occurred within the Project area (**Appendix B**). The *National Wetlands Inventory* (NWI) was reviewed to assess if wetlands and/or non-wetland waters had been previously recorded and mapped within in or near the Project area (**Appendix B**). Additional resources reviewed included the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California*, and CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (**Appendix B**).

Aerial photographs and the field reconnaissance survey were used to evaluate the potential presence of sensitive biological resources on and adjacent to the study area, defined as the proposed limits of work at all treatment facility, extraction well, and pipeline alignment option sites (34.22 acres) plus an additional 500 foot buffer around the proposed extraction well and treatment facility locations. A field survey of the study area was performed on January 20 and 21, 2020 to assess and document existing site

conditions and the potential presence of sensitive biological resources such as plants, wildlife, nesting birds, and jurisdictional waters and wetlands. The study area was surveyed on foot and visually inspected with the aid of binoculars (8 x 40) when needed. Survey conditions were clear skies, winds of 0-3 miles per hour, and a temperature of 64 degrees Fahrenheit. A formal jurisdictional delineation of waters and wetlands was not performed for the Project because the proposed Project would not be located within potentially jurisdictional features.

An additional burrowing owl (*Athene cunicularia*) (BUOW) habitat assessment and burrow survey were performed during both field survey days between 7:00 a.m. and 11:00 a.m. to identify potential burrows and BUOW signs throughout the study area (where accessible). The survey included a systematic search for burrows and BUOW signs by walking through potential habitat or surveying inaccessible areas with binoculars. Potential habitat included all areas with low growing vegetation, grasslands, shrub lands, with low density shrub cover, earthen berms, and any large debris piles. Survey transects were spaced to have 100 percent visual coverage of the ground. Potential burrow openings were assessed for BUOW presence through the presence of indicators such as prey remains, white-wash, cast pellets, and feathers. Any potential burrows, BUOWs, and/or sign was recorded and mapped with coordinates.

The study area has limited habitat for wildlife species that commonly occur within urban communities for this region. Urban-adapted avian species including killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), mallard (*Anas platyrhynchos*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Carduelis psaltria*), western kingbird (*Tyrannus verticalis*) and Anna's hummingbird (*Calypte anna*) were observed during the survey. The live animals observed were coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Otospermophilus beecheyi*). The western fence lizard (*Sceloporus occidentalis*) was the only reptile observed. There were no sensitive species observed within the study area.

a) Less than Significant with Mitigation Incorporated

The Project would be located in an urban, built-out setting with the proposed sites located on highly disturbed land and surrounded by existing development. The literature review concluded there are ten sensitive plant species and 30 sensitive wildlife species within five miles of the Project area (see Table 1 in **Appendix B**). However, sensitive species are not expected to occur within the Project area due to the lack of suitable habitat as well as historical and existing disturbances. Out of the 40 plant and wildlife sensitive species identified, only two wildlife species were determined to have a low potential to occur within the Project area and included BUOW and California horned lark.

Undeveloped areas at the Project sites contain marginally suitable habitat for BUOW and California horned lark (*Eremophila alpestris actia*). Suitable habitat for these two species

has low-growing, non-native ruderal species. The California horned lark are generally ground nesters and can nest on bare ground, which is present on the Project sites. Project site Cactus Corridor Well 2, Option 1 has burrows and California ground squirrels present, an indication of suitable habitat for BUOW. However, the potential habitat is low quality, near a highly travelled urban transportation corridor, and has high levels of existing disturbance. Therefore, there is a low potential of these species being present. No horned larks, BUOW or signs of either species being present were observed at the potential Project sites during the field survey.

The potential Project sites have shrubs or trees that could provide suitable nesting habitat for several common avian species. These common species include mourning doves and house finches that have the potential to nest in shrubs even in highly disturbed areas. Additionally, some species, such as horned larks, are typically ground nesters and will nest on bare ground such as that found on some of the potential well and treatment facility sites. However, the potential Project sites consist of low-quality habitat because of the existing disturbances and proximity to heavily travelled roadways. All the common avian species, except the horned lark, are not candidate, sensitive, or special status. During the field survey there were no nests observed or birds exhibiting nesting behaviors.

The proposed Project would be located in the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area (County of Riverside Ordinance No. 663). The County Ordinance requires all proposed development projects that are located within the fee area to be reviewed to assess the appropriate course of action to protect the survival of the species. Preparation of the Biological Resources Assessment (**Appendix B**) fulfills the requirements of the ordinance that the Project be reviewed. The Biological Resources Assessment determined the proposed Project area does not have the suitable grassland, costal shrub and sagebrush habitat needed to support the Stephen's Kangaroo Rat. Instead, the potential Project sites are all vacant areas that are highly disturbed and/or have dominant exotic plants, and are surrounded by urban development. Therefore, the proposed Project would not impact, or result is the loss of suitable habitat for the Stephan's Kangaroo Rat and no mitigation would be required.

Construction activities would primarily occur in areas that are highly disturbed that are surrounded by development. Such high levels of disturbance would likely deter wildlife and nesting birds from using the site long-term. Nonetheless, **Mitigation Measure BIO-1** would be implemented to ensure avoidance of direct impacts to burrowing owls and **Mitigation Measure BIO-2** would be implemented to avoid impacts to nesting birds in potential Project sites that contain trees. With **Mitigation Measures BIO-1** and **BIO-2**, there would be less than significant impacts.

b) No Impact

One sensitive plant community, sycamore alder riparian woodland, was identified approximately five miles from the Project area. Sycamore alder riparian woodland is protected under the MSHCP, CDFW, and USFWS. However, it is not present on any of the proposed Project sites, nor are the Project sites suitable to support such communities

due to the high level of disturbance and development. Sensitive plant and wildlife species typically have very specific habitat requirements, which the Project area does not support. There are no sensitive riparian or natural communities, as defined by local ordinance and CNDDB, present on the proposed Project sites. Additionally, there are no riparian/riverine habitats present within the potential Project sites. The Project sites have all been heavily disturbed and consist of either no vegetation, landscaping, recreational park facilities, or exotic upland species which are not conducive to supporting riparian/riverine habitat.

The Project area is within the boundaries of the Western Riverside County MSHCP, which identifies sensitive natural communities and seeks to protect those communities by protecting areas with biological and ecological diversity. The MSHCP identifies Criteria Areas, Public-Quasi Public Reserve Lands, and Core or Linkage Areas. These areas are defined in order to permanently preserve portions of habitat and decrease development in these areas. The Project area would not be located in an MSHCP Criteria Area, Public-Quasi Public Reserve Lands, or within a Core or Linkage (**Appendix B**). There are no riparian/riverine habitats protected by the MSHCP on the proposed Project sites; therefore, no MSHCP actions are required. Lastly, there are no jurisdictional features located within the Project area that are under jurisdiction of the USACE, RWQCB, or CDFW. Therefore, the proposed Project would have no impact on any riparian habitat or other sensitive natural community.

c) No Impact

The proposed Project would not be located anywhere with jurisdictional drainage or wetlands. At Treatment Site Option #3/Cactus Corridor East Santiago Well Site a man-made and maintained earthen retention basin was observed during the field survey; however, it was fully contained onsite with no offsite connection. No riparian vegetation was present in or around the basin such as shrubs, persistent emergents, emergent mosses, lichens, or trees. Therefore, the basin is not considered a jurisdictional feature. The proposed Project would have no impact on jurisdictional wetlands.

Additionally, the Project area was surveyed for vernal pools and fairy shrimp habitat. There were no vernal pools or fairy shrimp habitat observed. The potential Project sites have moderately well-drained soils that have been heavily disturbed due to past uses and would not be able to support vernal pools or vernal pool species. Therefore, no action would be required in regard to vernal pools. No impact would occur.

d) No Impact

There are no mapped essential habitat connectivity areas in the immediate vicinity of the Project sites (**Appendix B**). There are two mapped habitat connectivity areas located within five miles of the Project area. One is approximately 1.5 miles southeast near the Perris Reservoir and the other is approximately 3 miles northeast near the Box Springs Mountain Reserve Park. These two areas would not be impacted by the Proposed project because the Project would be confined to disturbed areas and would be separated from the conservation areas by roadways and residential areas. Therefore, the proposed Project would have no impacts on wildlife movement.

e) No Impact

There are no other biological resources protected by local policies or ordinances within the Project area. There would be no impact.

f) Less than Significant with Mitigation Incorporated

The proposed Project would be located in the Western Riverside MSHCP and portions of the potential Project sites would be located within the BUOW study area. There is low potential for BUOW to occur at the proposed Project locations because the potential sites are highly disturbed and surrounded by urban development (see response to question *a*, above, for more details*).* In addition, no BUOW or their signs were observed during the field survey. To ensure minimal impact to BUOW, **Mitigation Measure BIO-1** would be implemented. Additionally, the Project would not be located within a Criteria Cell or Public/Quasi Public conserved lands. The nearest Public/Quasi Public conserved lands are approximately one mile southeast of the Project area near the Lake Perris State Recreation Area. The proposed Project would not impact these conserved lands because of the urban development that separates them. Therefore, the proposed Project would have a less than significant impact with the implementation of **Mitigation Measure BIO-1**.

Mitigation Measures:

BIO-1: Burrowing Owl Preconstruction Clearance Survey. A qualified wildlife biologist shall conduct a pre-construction survey of the impact areas to confirm presence/absence of burrowing owl individuals no more than 30 days prior to construction. The survey methodology will be consistent with the methods outlined in the CDFW *Staff Report on Burrowing Owl Mitigation* (2012). If no active breeding or wintering owls are identified, no further action is required.

If burrowing owls are detected onsite, the following actions shall be implemented in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (2012):

- A qualified wildlife biologist shall be onsite during initial ground-disturbing activities in potential burrowing owl habitat.
- No ground-disturbing activities shall be permitted within a buffer no less than 656 feet from an active burrow, depending on the level of disturbance, unless otherwise authorized by CDFW. Occupied burrows will not be disturbed during the nesting season (February 1 to August 31), unless a qualified biologist verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- During the nonbreeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 165 feet from the burrow, depending on the level of disturbance, and

the site is not directly affected by the project activity. A smaller buffer may be established in consultation with CDFW. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be excluded from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation* (2012).

- Burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed based on the recommendations made in the St*aff Report on Burrowing Owl Mitigation* (2012). The plan shall include, at a minimum:
  - Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species
  - Type of scope to be used and appropriate timing of scoping
  - Occupancy factors to look for and what shall guide determination of vacancy and excavation timing
  - Methods for burrow excavation
  - Removal of other potential owl burrow surrogates or refugia onsite
  - Methods for photographic documentation of the excavation and closure of the burrow
  - Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take
  - Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals
- Compensatory mitigation for lost breeding and/or wintering habitat shall be implemented onsite or offsite through implementation of a Mitigation Land Management Plan based on the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) guidance. The plan shall include the following components, at a minimum:
  - Temporarily disturbed habitat on the project site shall be restored, if feasible, to pre-project conditions, including decompacting soil and revegetating;
  - Permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat shall be mitigated such that the habitat acreage, number of burrows and burrowing owl impacted are replaced based on a site-specific analysis which includes conservation of similar vegetation communities comparable to or better than that of the impact area, and with sufficiently large acreage, and presence of fossorial mammals;
  - Mitigation land acreage shall not exceed the size of the Project site;
  - Permanently protect mitigation land through a conservation easement deeded to a nonprofit conservation organization or public agency with a conservation mission. If the project is located within the service area of a CDFW approved

burrowing owl conservation bank, the project operator may purchase available burrowing owl conservation bank credits.

- Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
- Mitigation lands shall be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.

BIO-2: Preconstruction Nesting Bird Survey. If Project construction occurs during avian nesting season (February to September) then a survey for active nests must be conducted by a qualified biologist one to two weeks prior to construction activities. If active nests are identified and present onsite, clearing and construction within 50-250 feet of the nest, depending on the species (50 feet for common urban-adapted native birds and up to 250 feet for raptors), shall be postponed until the nest is vacated, the juveniles have fledged, and there is no evidence of a second attempt at nesting. The qualified biologist shall establish limits to the construction in order to avoid a nest site with flagging and stakes or construction fencing. If construction must occur within the buffer, it shall be conducted at the discretion of a qualified biological monitor to ensure indirect impacts to the nesting birds are avoided.

3.5 Cultural Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	[ ]	[X]	[ ]	[ ]
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	[ ]	[X]	[ ]	[ ]
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	[ ]	[X]	[ ]	[ ]

Discussion

A Cultural Resources Assessment Report was prepared in February 2020 for the proposed Project. The Cultural Resources Assessment Report was prepared to satisfy

CEQA-Plus investigation, Section 106 of the National Historic Preservation Act (NHPA), and the National Environmental Policy Act (NEPA). This Report included a cultural resources records search, Native American and local historic group consultation, historical map and imagery review, and a field survey on January 20 and 21, 2020. The complete report is provided in **Appendix C** and is relied upon for the analysis in this IS/MND.

On January 6, 2020 a cultural resources records search of the California Historical Resources Information System (CHRIS) at the Eastern Information Center at the University of California, Riverside was conducted to identify any previously recorded cultural resources and cultural resources studies within the Project area and a one-half-mile radius. Sixty previous cultural resources studies have been completed within a one-half-mile radius of the Project area between 1953 and 2019 (see **Appendix C**, Table 1). Five of these previous studies intersect with the Project area and cover less than ten percent of the proposed Project area. Sixteen cultural resources have been documented within the one-half-mile radius (see **Appendix C**, Table 2), which includes five prehistoric archaeological sites, two prehistoric isolated artifacts or features, three historic-period archaeological sites, and six historic-period built-environment (buildings and structures) resources. None of these cultural resources would be located within the Project area of potential effects (APE), defined as the area that would be directly impacted by the Project activities plus a one-half-mile buffer. However, two historic period buildings and a historical period loading dock are located less than 500 feet from the APE. Most of the prehistoric sites represent bedrock milling features that are clustered at the base of a set of unnamed hills east of the Project APE.

On January 15, 2020 the Moreno Valley Historical Society, City of Moreno Valley Environmental and Historical Preservation Board, Riverside African American Historical Society, and March Field Air Museum were contacted to request information regarding historical resources. Overall, no concerns regarding historic properties in or near the Project area were raised. On December 26, 2019 Section 106 Native American outreach was initiated. *Section 3.18 Tribal Cultural Resources* provides an overview of the tribal outreach and consultation in regard to the proposed Project.

An aerial photograph of the proposed Project shows that in 1966 most of the area was characterized by agricultural fields with sparse areas of residential development (**Appendix C**). During this time, the runway and buildings associated with March Air Reserve Base were present southwest of the proposed Project area. Additionally, the photograph shows there was a natural drainage running southwest to northeast of the Project area between Cottonwood Avenue and Alessandro Boulevard. Later aerial images show that the drainage was channelized sometime between 1978 and 1980. The historical imagery review also shows much of the Project area transitioned from agricultural land to residential, commercial, and light industrial development in the 1980s and 1990s (**Appendix C**).

The field survey was conducted on January 20 and 21, 2020 by a qualified archaeologist accompanied by a tribal representative from the Soboba Band of Luiseño Indians. A

pedestrian survey was conducted on proposed well and treatment site locations. All exposed ground surfaces were carefully examined with ten-meter spaced transects across each survey area. Large portions of the proposed Project pipeline alignment are already developed and covered with pavement. Ground visibility varied greatly between the well and treatment site locations by landscaping, playground equipment, homeless encampments, a retention pond, and modern refuse. A semi-subterranean vault and a cinder block structure were identified on Cactus Corridor Well Site 2, Option 1 and Treatment Site, Option 2. Neither of these structures display characteristics that indicate they are historic in age. Subsequent review of historical images of these two areas also showed no evidence of the structures being historical. No other historic-age built-environment or archaeological resources were identified within the Project area.

a) Less than Significant with Mitigation Incorporated

According to the CHRIS records and field survey conducted for the Cultural Resources Assessment (**Appendix C**), no historical structures overlap with the Project area. However, if previously unknown historical resources are encountered during Project ground-disturbing activities, with implementation of **Mitigation Measures CUL-1** through **CUL-6**, there would be no impact on historic properties or resources.

b) Less than Significant with Mitigation Incorporated

Archaeological resources are not anticipated to be encountered because no archaeological resources have been previously recorded within or immediately adjacent to the Project area and because of the high degree of existing development of the Project area. However, if ground-disturbing activities expose previously unrecorded resources, **Mitigation Measures CUL-1** through **CUL-6** would help prevent further damage to the cultural or archaeological resources. With implementation of **Mitigation Measures CUL-1** through **CUL-6**, potential impacts resulting in an adverse change to archeological resources would be less than significant.

c) Less than Significant with Mitigation Incorporated

There is always a possibility of discovering human remains during ground disturbing activities. **Mitigation Measure CUL-7** would be implemented to ensure proper procedures are in place if human remains are discovered during construction. With **Mitigation Measure CUL-7**, the impacts would be less than significant.

Mitigation Measures:

CUL-1: Cultural Resources Treatment and Monitoring Agreement. At least 30 days prior to the start of any ground-disturbing activities, EMWD shall contact the Consulting Tribe(s) to develop Cultural Resource Treatment Monitoring Agreement(s) ("Agreement"). The Agreement(s) shall address the treatment of archaeological resources inadvertently discovered on the Project site; Project grading; ground disturbance and development scheduling; the designation, responsibilities, and participation of tribal monitor(s) during grading, excavation, and ground disturbing

activities; and compensation for the tribal monitors, including overtime, weekend rates, and mileage reimbursements.

CUL-2: Develop a Cultural Resources Monitoring Plan. Prior to any grading activities, a Cultural Resources Monitoring Plan shall be prepared by a qualified archaeologist in consultation with the Consulting Tribe(s). The plan shall identify the location and timing of cultural resources monitoring. The plan shall also contain an allowance that the qualified archaeologist, based on observations of subsurface soil stratigraphy or other factors during initial grading, and in consultation with the Native American monitor and EMWD, may reduce or discontinue monitoring as warranted if the archaeologist determines that the possibility of encountering archaeological deposits is low. The plan shall outline the appropriate measures to be followed in the event of unanticipated discovery of cultural resources during Project implementation (including during the survey to occur following vegetation removal and monitoring during ground-disturbing activities). The plan shall identify avoidance as the preferred manner of mitigating impacts to cultural resources. The plan shall establish the criteria utilized to evaluate the historic significance (per CEQA) of the discoveries, methods of avoidance consistent with CEQA Guidelines Section 15126.4(b)(3), as well as identify the appropriate data recovery methods and procedures to mitigate the effect of the Project if avoidance of significant historical or unique archaeological resources is determined to be infeasible. The plan shall also include reporting of monitoring results within a timely manner, disposition of artifacts, curation of data, and dissemination of reports to local and state repositories, libraries, and interested professionals. A qualified archaeologist and Consulting Tribe(s) tribal monitor shall attend a pre-grade meeting with EMWD staff, the contractor, and appropriate subcontractors to discuss the monitoring program, including protocols to be followed in the event that cultural material is encountered.

CUL-3: Tribal Monitoring Agreements. A qualified archaeological monitor and a Consulting Tribe(s) monitor shall be present for ground-disturbing activities associated with the Project, and both the Project archaeologist and Tribal Monitor(s) will make a determination as to the areas with a potential for encountering cultural material. At least seven business days prior to Project grading, EMWD shall contact the tribal monitors to notify the Tribe of grading/excavation and the monitoring program/schedule, and to coordinate with the Tribe on the monitoring work schedule. Both the archaeologist and the tribal monitor shall have the authority to stop and redirect grading activities in order to evaluate the nature and significance of any archaeological resources discovered within the Project limits. Such evaluation shall include culturally appropriate temporary and permanent treatment pursuant to the Cultural Resources Treatment and Monitoring Agreement, which may include avoidance of cultural resources, in-place preservation, data recovery, and/or reburial so the resources are not subject to further disturbance in perpetuity. Any reburial shall occur at a location predetermined between EMWD and the Consulting Tribe(s), details of which shall be addressed in the Cultural Resources Treatment and Monitoring Agreement in **Mitigation Measure CUL-1**. Treatment may also include curation of the

cultural resources at a tribal curation facility, as determined in discussion among EMWD, the Project archaeologist, and the tribal representatives and addressed in the Cultural Resources Treatment and Monitoring Agreement referenced in **Mitigation Measure CUL-1**.

CUL-4: Evaluation of Discovered Artifacts. All artifacts discovered at the development site shall be inventoried and analyzed by the Project archaeologist and tribal monitor(s). A monitoring report will be prepared, detailing the methods and results of the monitoring program, as well as the disposition of any cultural material encountered. If no cultural material is encountered, a brief letter report will be sufficient to document monitoring activities.

CUL-5: Disposition of Inadvertent Discoveries. In the event that Native American cultural resources are recovered during the course of grading (inadvertent discoveries), the following procedures shall be carried out for final disposition of the discoveries with the tribe. EMWD shall relinquish ownership of all cultural resources, including sacred items, burial goods, and all archaeological artifacts and non-human remains as part of the required mitigation for impacts to cultural resources, and adhere to the following:

1. Preservation-in-place is the preferred option; preservation-in-place means avoiding the resources and leaving them in the place where they were found with no development affecting the integrity of the resource.

2. If preservation-in-place is not feasible, on-site reburial of the discovered items as detailed in the Monitoring Plan required pursuant to **Mitigation Measure CUL-2** is the next preferable treatment measure. This shall include measures and provisions to protect the future reburial area from any future impacts in perpetuity. Reburial shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of all Consulting Native American Tribal Governments.

3. In the event that on-site reburial is not feasible, EMWD will enter into a curation agreement with an appropriate qualified repository within Riverside County that meets federal standards per 36 Code of Federal Regulations 800 Part 79 and therefore would be curated and made available to other archaeologists/researchers for further study. The collections and associated records shall be transferred, including title, to an appropriate curation facility within Riverside County, to be accompanied by payment of the fees necessary for permanent curation.

CUL-6: Non-Disclosure of Reburial Locations. It is understood by all parties that unless otherwise required by law, the site of any reburial of culturally sensitive resources shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, pursuant to the specific exemption set forth in California Government Code 6254(r), parties, and Lead

Agencies will be asked to withhold public disclosure information related to such reburial.

CUL-7: Human Remains. If Native American human remains are encountered, Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5 will be followed. If human remains are encountered, no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the coroner shall contact the NAHC within 24 hours. Subsequently, the NAHC shall identify the person or persons it believes to be the "most likely descendant." The most likely descendant (MLD) shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98

3.6 Energy

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

Discussion

MVU was established in 2001 to provide electrical service to new residents and businesses within areas of the City of Moreno Valley that are being converted from fallow or agricultural lands to housing, commercial and industrial uses. MVU's service area extends from the City boundary in the south up to Bay Avenue, covering the majority of the proposed Project area. Electrical service for the proposed Project alignment between Bay Avenue and Cottonwood Avenue (bound by Heacock Street and Indian Street) is provided by SCE. Natural gas service for the entire proposed Project area is provided by the Southern California Gas Company (City of Moreno Valley Financial and Management

Services n.d.) MVU power content mix specifies that 26 percent of power comes from renewable sources, and 74 percent comes from unspecified sources through transactions with other energy suppliers. SCE's power content mix utilizes 36 percent renewables, 4 percent large hydroelectric, 17 percent natural gas, 6 percent nuclear, and 37 percent from unspecified power sources through transactions.

The City produced both an energy Efficiency and Climate Action Strategy and a Greenhouse Gas Analysis in 2012, in addition to participating in the Western Riverside Council of Governments Subregional Climate Action Plan (CAP). The Efficiency and Climate Action Strategy outlines and prioritizes numerous energy efficiency and energy reduction measures, while the Greenhouse Gas Analysis establishes goals and policies that incorporate environmental responsibility to reduce GHG emissions. The Greenhouse Gas Analysis sets a goal to reduce the City's emissions to 1990 levels by 2020 which is equal to 798,693 metric tons carbon dioxide equivalent (CO_2e), which is consistent with the State's emissions reduction targets.

a) Less Than Significant Impact

Construction of the proposed Project would involve construction-related fossil fuel consumption from operation of diesel-powered construction equipment, and fossil fuel consumption from material hauling, delivery, and worker vehicle trips. **Table 3-10** summarizes the anticipated construction fleet for the proposed Project.

Table 3-10: Construction Fleet Summary

Construction Phase	Duration (days)	Anticipated Fleet	Anticipated Trips
Extraction Wells (Site Preparation)	132	Tractors/Loader/Backhoes (1) – 8 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Off-Highway Trucks – Water Trucks (1) – 2 hrs/day	Workers – 8 trips/day Hauling – 1 trip/day
Extraction Wells (Grading/Drilling)	84	Bore/Drill Rig (1) – 24 hrs/day Crane (1) - 24 hrs/day Off-Highway Trucks – Utility Trucks (1) – 12 hrs/day Welder (1) – 18 hrs/day Compressor (1) – 18 hrs/day Pump (1) – 18 hrs/day Generator (1) – 18 hrs/day	Workers – 18 trips/day Hauling – 1 trip/day
Extraction Wells (Pump Installation)	265	Crane (1) - 7 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Welder (1) – 8 hrs/day Compressor (1) – 6 hrs/day Pump (1) – 6 hrs/day Generator (1) – 8 hrs/day	Workers – 11 trips/day Hauling – 3 trip/day
Pipeline Construction	218	Tractor/Loader/Backhoe (1) – 6 hrs/day Hydraulic Excavator (1) – 6 hrs/day	Workers – 30 trips/day Hauling – 7 trip/day

Construction Phase	Duration (days)	Anticipated Fleet	Anticipated Trips
		Crane (1) – 4 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Off-Highway Trucks – Water Trucks (1) – 2 hrs/day Welder (1) – 6 hrs/day Compressor (1) – 6 hrs/day Pump (1) – 6 hrs/day Concrete/industrial Saw (1) – 6 hrs/day Sweeper (1) – 6 hrs/day Paver (1) – 6 hrs/day Generator (1) – 6 hrs/day	
Treatment Site (Site Preparation)	32	Tractors/Loader/Backhoes (2) – 8 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Off-Highway Trucks – Water Trucks (1) – 2 hrs/day	Workers – 8 trips/day Hauling – 0 trip/day
Treatment Site (Grading)	29	Tractors/Loader/Backhoes (2) – 8 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Off-Highway Trucks – Water Trucks (1) – 2 hrs/day	Workers – 10 trips/day Hauling – 9 trip/day
Treatment Site (Building Construction)	288	Tractor/Loader/Backhoe (2) – 6 hrs/day Crane (1) – 7 hrs/day Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Excavator (2) – 6 hrs/day Forklift (2) – 6 hrs/day Welder (1) – 6 hrs/day Compressor (1) – 6 hrs/day Pump (1) – 6 hrs/day Generator (1) – 6 hrs/day Concrete Pumper/mixer (1) – 6 hrs/day	Workers – 15 trips/day Hauling – 0 trip/day
Treatment Site (Paving)	23	Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Concrete Pumper/mixer (1) – 6 hrs/day	Workers – 5 trips/day Hauling – 0 trip/day
Treatment Site (Architectural Coating	331	Off-Highway Trucks – Utility Trucks (1) – 4 hrs/day Compressor (1) – 6 hrs/day Generator Sets (1) – 6 hrs/day	Workers – 4 trips/day Hauling – 0 trip/day

Sources: Project-specific information provided by Kennedy-Jenks design engineers and duration based on total construction timeframe. See *Section 2 Project Description*. CalEEMod Version 2016.3.2; see Appendix A for model output. When project-specific equipment not available in CalEEMod, alternate construction equipment selected based on similar horsepower.

Operation of the proposed Project would involve consumption of electricity from the local utility to power the well pumps and other equipment. **Table 3-11** summarizes the estimated operation energy consumption. In addition to the equipment identified in **Table 3-11**, each well site would be provided with a portable generator connection, at a minimum, for emergency scenarios. Emergency generators may be installed at the well sties at a later date. For the purposes of this analysis, it was assumed that each emergency generator would be diesel powered and would operate 24 hours in any given year.

Table 3-11: Operation Energy Consumption

Equipment	Qty	hp	hrs/day	kWh/day	Comments
Cactus Corridor Wells	4	50-75	24	3,500–5,400	Range depends on the type of well pump provided (vertical vs submerged)
Cactus Corridor East Wells	2	200-250	24	7,100–9,000	Range depends on the type of well pump provided (vertical vs submerged)
Potable Water Booster Pumps	2+1 standby	150-175	12	2,600–3,200	Potable Water Booster Pumps
Backwash Booster Pumps	1+1 standby	25-30	3	55–70	Backwash Booster Pumps
Air Compressor	1	5	12	45	Air Compressor
Blend Tank Mixer	1	5	12	45	Blend Tank Mixer

Sources: Project-specific information provided by Kennedy-Jenks design engineers and expected equipment to be installed. See *Section 2 Project Description*.

The proposed Project would implement typical construction practices such as trenching and repaving. As shown in **Table 3-10**, the Project would not require unusual or excessive construction equipment or practices that would result in wasteful, inefficient, or unnecessary consumption of energy compared to projects of similar type and size. In addition, the construction fleet contracted for the proposed Project would be required to comply with the CARB In-Use Off-Road Diesel-Fueled Fleets Regulations, which would limit vehicle idling time to five minutes, restrict adding vehicles to construction fleets with older-tier engines, and establish a schedule for retiring older, less fuel-efficient engines from the construction fleet. Once construction is complete, the proposed Project would involve operational energy consumption, as detailed in **Table 3-11**. So as not to incur unnecessary costs, EMWD would be incentivized to use the most energy efficient pumps, compressors, and other equipment possible to minimize operational costs. As such, construction and operation of the proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy during construction and impacts would be less than significant.

b) Less Than Significant Impact

The City of Moreno Valley Energy Efficiency and Climate Action Strategy (City of Moreno Planning Division 2012) focuses on reducing energy and emissions from the City as an organization and how to encourage community members to reduce their own energy and GHG emissions. The City of Moreno Valley Energy Efficiency and Climate Action Strategy includes suggested measures to reduce emissions and GHGs through energy use reduction, water use reduction, recycling and diversion, alternative transportation, and renewable energy utilization. Operation of the proposed Project would not involve a substantial number of new vehicle trips. Long-term, the Project would generate up to one additional trip per day for O&M activities (bi-weekly visits by an EMWD operator to the treatment facility, monthly routine maintenance at the treatment facility, monthly chemical delivery, annual inspection of the GAC Media, and monthly inspections of the wells) and approximately five tanker truck trips to dispose of brine wastewater from the treatment facility every four to five days. The Project would not involve land use changes that would indirectly result in an increase in vehicle trips or vehicle miles travelled, for example from relocation of an existing road. As explained under question "b" above, the Project would not involve wasteful or inefficient energy consumption. Therefore, the Project would not conflict with the City strategy, which was developed to keep Citywide GHG emissions in line with State reduction targets. Therefore, the proposed Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant and no mitigation would be required.

Mitigation Measures: None required or recommended.

3.7 Geology and Soils

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence	[ ]	[ ]	[ ]	[X]

of a known fault? Refer to Division of Mines and Geology Special Publication 42.				
ii) Strong seismic ground shaking?	[ ]	[ ]	[X]	[ ]
iii) Seismic-related ground failure, including liquefaction?	[ ]	[ ]	[X]	[ ]
iv) Landslides?	[ ]	[ ]	[X]	[ ]
b) Result in substantial soil erosion or the loss of top soil?	[ ]	[ ]	[X]	[ ]
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	[ ]	[ ]	[X]	[ ]
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	[ ]	[ ]	[X]	[ ]
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	[ ]	[ ]	[ ]	[X]
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	[ ]	[X]	[ ]	[ ]

Discussion

The City of Moreno Valley is located in a valley which is surrounded by hills and mountains along the northern, eastern, and southern side. The proposed Project sites themselves would be located on the valley floor, which is relatively flat with minimal slope. The Project area is located in the Hanford-Tujunga-Greenfield soil area, which consists of well-drained to somewhat excessively drained soils developed in granitic alluvium (City of Moreno Valley 2006a and 2006b).

As with most regions in Southern California, the Project area is located in areas of several known active earthquake faults. The San Jacinto Fault Zone runs through the eastern portion of the City of Moreno Valley. The San Andres Fault Zone is approximately 15 to 20 miles north of the City of Moreno Valley and the Elsinore Fault Zone is approximately 12 to 18 miles south of the City.

There are several regions of the City known to have unstable soils and/or be susceptible to landslides. The Badlands in Moreno Valley, located on the eastern edge of the City, consist of shale and siltstone that is highly porous and does not hold together when wet, which can cause slope instability and landslides during earthquake events (City of Moreno Valley 2006b). Other known unstable soils include the mountain slopes located in the southern portion of Moreno Valley which have loose granitic boulders that could slide down the slopes (City of Moreno Valley 2006a and 2006b).

a.i) No Impact

The Project would not be associated with significant levels of risk of loss, injury or death from rupture of a known earthquake fault. Based on California's Geological Survey's Earthquake Fault Zone Map (CGS 2018), the Project area is not within a Fault Zone. The nearest potentially active fault mapped in accordance with the Alquist-Priolo Earthquake Fault Zoning Act is the San Jacinto Fault Zone. The shortest distance between this Fault Activity Zone and the proposed Project facilities (pipelines) is 4.20 miles. Due to the distance between the Fault Zone and Project area, there is no potential for surface fault rupture.

a.ii) Less than Significant Impact

The San Jacinto Fault Zone, which runs through the eastern portion of the City of Moreno Valley and as close as 4.2 miles to proposed Project facilities, is one of the most active faults in Southern California. Additionally, the San Andres Fault Zone is approximately 15 to 20 miles north of Moreno Valley and the Elsinore Fault Zone is approximately 12 to 18 miles south. The Project area has a 0.857gravity (g) for potential ground shaking based on CDOC Ground Motion Interpolator (2008). Ground shaking potential is calculated as the potential for ground shaking that has a two percent chance of being exceeded in 50 years and is measured on a ratio scale to signify the severity of the earthquake. Typically, potential ground shaking will be seen on a scale of 0g to 1.3g or even greater – there is no set scale because this measurement uses a ratio. The Peak Ground Acceleration (pga) for the Project area is relatively high due to the close proximity to the San Jacinto Fault Zone. Therefore, the Project components would likely be subject to seismic ground shaking in a measurable seismologic event. Seismic activity is common in California, generally, and the Project facilities would be designed per EMWD's Engineering Standards and Specifications, which would ensure structural resiliency. The Project would also be designed and constructed pursuant to applicable American Water Works Association (AWWA) standards, and would incorporate measures to accommodate seismic loading pursuant to guidelines such as the "Greenbook" Standard Specifications for Public Works Construction (Greenbook Committee of Public Works

Standards, Inc. 2018) and the International Building Code (IBC; International Code Council 2018). These guidelines are produced through joint efforts by industry groups to provide standard specifications for engineering and construction activities, including measures to accommodate seismic loading parameters. These standards and guidelines are widely accepted by regulatory authorities and are regularly included in related standards such as municipal building and grading codes. In addition, the Project design would follow guidelines within the California Building Code (CBC; California Code of Regulations, Title 24, Part 2), which is based on the IBC with amendments to reflect conditions specific to California. Because building and construction codes related to seismic shaking would be followed, there would be less potential for structural damage or loss due to seismic ground shaking. Even if structural damage does occur during a seismic event it would be isolated to the various Project facilities and Project areas; the Project would not exacerbate a risk of seismic-related damage to other existing resources in the vicinity. Impacts would be less than significant.

a.iii) Less than Significant Impact

Liquefaction is the process by which clay-free soil, such as sands and silts, temporarily lose cohesion and strength and turn into a fluid state during a severe ground shaking event. This primarily occurs in areas saturated with high groundwater levels and recent deposits of sands and silts. Although the City of Moreno Valley has seen no evidence of liquefaction events occurring in the area (City of Moreno Valley 2006b), western portions of the City have shallow groundwater. Therefore, the Project area may be susceptible to liquefaction. A soils and geotechnical report would be prepared for all Project components by a California licensed geotechnical engineer. The geotechnical report would evaluate various geotechnical characteristics, including determining whether there is a liquefaction risk for the Project area, and provide recommendations for materials and design that should be incorporated into the specifications for each Project facility and component. In addition, all Project facilities would be designed in accordance to EMWD's Engineering Standards and Specifications and the other standards and guidelines described under "a.ii" above, that would ensure structural resiliency during earthquakes and other ground instability events, such as liquefaction. Therefore, with mitigation incorporated, impacts would be less than significant.

a.iv) Less than Significant Impact

Landslide risk is typically associated with high slopes and unstable soils. The majority of the Project sites are flat or have a minimal slope, according to the County of Riverside General Plan's Figure S-5 (County of Riverside 2019). Therefore, the potential for the Project to exacerbate the risk of landslides in the Project area, or be impacted by a landslide, is low. In addition, the proposed Project facilities are not in a region known to have unstable soils, such as the "Badlands." The Badlands in Moreno Valley, located on the eastern edge of the City, consist of shale and siltstone that is highly porous and does not hold together when wet, which can cause slope instability and landslides during earthquake events (City of Moreno Valley 2006b). Other known unstable soils include the mountain slopes located in the southern portion of Moreno Valley which have loose

granitic boulders that could slide down the slopes. The Project facilities are approximately 0.8 miles away from these mountain slopes and, therefore, there is a low probability that the Project could be impacted. Finally, all Project facilities would be designed in accordance to EMWD's Engineering Standards and Specifications and the other standards and guidelines described under "a.ii" above and a soils and geotechnical report would be prepared for all Project components that would evaluate soil stability of the Project area. Therefore, impacts would be less than significant.

b) Less than Significant Impact

Construction of the Project components would require soil-disturbing activities such as excavation, which would expose soil. The soil exposed by construction would be subject to erosion if exposed to strong winds, heavy rains, or other storm events. Proposed Project construction activities would disturb one acre or more in total and would require an NPDES Construction General Permit. A SWPPP would be prepared and implemented in compliance with the Construction General Permit. BMPs would be identified in the SWPPP to control and reduce pollutant discharges associated with construction and erosion and sediment control. Once construction is complete, all pipelines disturbance areas would be returned to pre-Project conditions and therefore would not result in further soil erosion. The wells and treatment/blending facility sites would be paved or landscaped. All stormwater that occurs on the sites would be collected as runoff and conveyed and discharged to the street in accordance with applicable storm water drainage design and water quality control requirements. Therefore, impacts would be less than significant.

c) Less than Significant Impact

The Project components would be located in the Hanford-Tujunga-Greenfield soil area, which consists of well-drained to somewhat excessively drained soils developed in granitic alluvium (City of Moreno Valley 2006a and 2006b). The topsoil layer consists of coarse sandy loam with underlying layers of coarse sandy loam and loamy sand (City of Moreno Valley 2006a and 2006b). Soil stability is poor to fair with significant erosion potential (City of Moreno Valley 2006a and 2006b). These soils are found at nearly level to moderately steep slopes of 5 to 15 percent, which lowers the risk of on- or off-site landslides (City of Moreno Valley 2006a and 2006b).

Additional landslide impacts were addressed in response a.iv above. Lateral spreading is caused by earthquake-induced liquefaction, which has been determined to be a less than significant impact. Liquefaction and lateral spreading are a risk associated with the Project area due to the well-drained, clay-free soils and shallow groundwater levels. However, the Project would be withdrawing groundwater, which would help regulate groundwater levels and minimize the potential risk of liquefaction. Additionally, the geotechnical report produced and adherence to EMWD's Engineering Standards and Specifications and other standards and guidelines would ensure structural resiliency to earthquake events and associated lateral spreading and liquefaction. Therefore, implementation of the

Project is not expected to result in significant risk of landslide, lateral spreading, or liquefaction.

Subsidence and collapse are a known risk in the southeast corner of Moreno Valley (Figure 5.6-2, City of Moreno Valley, 2006b); however, no proposed Project facilities would be located in this area. The proposed Project would extract groundwater, which, when conducted in an unregulated manner, has been known to cause land subsidence and collapse in other parts of California. However, as explained in further detail under question "b" in *Section 3.10 Hydrology and Water Quality*, the Project would extract groundwater in a sustainable, regulated manner that would not lead to the extreme levels of overproduction that has caused land subsidence and collapse in other parts of California. EMWD has been managing groundwater levels in the western portion of the San Jacinto Groundwater Basin via the Annual West San Jacinto Groundwater Management Plan since 1995. Water levels were drawn down to historic lows in the middle of the 20th century and have been slowly rising since that time. The reasons for the rise are currently being studied; however, factors include: increased sales of EMWD recycled and municipal water; reduced groundwater extraction, primarily due to less agricultural water use; incidental recharge from EMWD recycled water facilities; and, for the portions of the Perris North Sub-Basin downstream of Lake Perris, seepage from Lake Perris. The proposed Project would extract approximately 3,700 AFY in a manner consistent with the GSP, currently under development, which will require groundwater to be produced in a sustainable manner. Therefore, it is not expected to be susceptible to risks associated with land subsidence or collapse; impacts would be less than significant.

d) Less than Significant Impact

Expansive soils have the ability to significantly change their volume, shrink and swell, due to their soil moisture content. Expansive soils can crack rigid structures and potentially create pipeline rupture. Typically, expansive soils are very fined grained with a high to very high percentage (60 percent or more) of clay. Potentially expansive soils in the City are found in the Badlands–San Timoteo geological region (Moreno Valley, 2006b); however, none of the proposed Project sites would be located in this area. The Project would be in a soil area that is well-drained and consists of sandy loam soils with 1.5-15 percent clay particles (USDA 2019). Based on the clay particle content of the soil, the potential Project sites would not be located on expansive soils. With the project-specific geotechnical report, expansive soils would be identified, and design specification would be implemented to avoid damage to Project facilities. The geotechnical report would include necessary design specifications that the Project shall incorporate, including recommendations for materials and design, to avoid infrastructure damage from expansive soils. Additionally, the Project would be designed in accordance with EMWD's Engineering Standards and Specifications, as well as other State and International buildings standards and guidelines, which would ensure structural resiliency and minimize the potential effects of expansive soils. Therefore, impacts would be less than significant.

e) No Impact

The Project does not propose the construction or use of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impact.

f) Less than Significant Impact with Mitigation Incorporated

Fossils are valuable and nonrenewable resources of remains of ancient, commonly extinct organisms that help us understand the evolutionary history of life on earth. A paleontological study was completed in compliance with CEQA, federal, state, and local regulations to determine the potential Project impacts to paleontological resources in the Project area (**Appendix D**).

Federal regulations are applicable for projects on federal lands or to projects that involve a federal agency license, permit, approval, or funding. These regulations include the National Environmental Policy Act (United State Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), which instructs federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b)(4))." As well as the Paleontological Resources Preservation Act (PRPA), a part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D), which instructs for paleontological resources to be managed and protected on federal lands and to develop plans for inventorying, monitoring, and deriving scientific and education use of these resources. PRPA also prohibits the removal of paleontological resources from federal lands. State regulations include the California Public Resources Code (Section 5097.5) which prevents an individual from removing, destroying, or altering any paleontological resources found on public lands without the permission of the public agency that has jurisdiction over the lands. The City of Moreno Valley contains on a policy (Policy 7-6) for paleontological resources in their General Plan which states that areas expected to have paleontological or archaeological resources, based on the survey conducted by the University of California, Riverside Archaeological Research Unit, should follow their report to reduce potential impacts (**Appendix D**).

A Paleontological Resource Assessment Report was prepared in February 2020 for the proposed Project (the complete Report is provided in **Appendix D**). Paleontological sensitivity of the geological units underneath the Project area was assessed through a literature review and a paleontological locality search. A request was submitted to the National History Museum of Los Angeles County for a list of known fossil localities for the Project area and immediate vicinity. The potential for impacts to significant paleontological resources was assessed based on the potential for ground disturbance to directly impact paleontological sensitive geologic units as defined by the Society of Vertebrate Paleontology (SVP) (2010).

The Project area is located in the central Perris Block of the northern portion of the Peninsular Ranges Province, which is one of the eleven major geomorphic provinces in California (**Appendix D**). The Perris Block consists of Pleistocene and Holocene alluvial fan deposits deriving from the San Gabriel Mountains to the north of the City and fluvial

depots from the Santa Ana River (Norris and Webb 1990; Morton and Miller 2006). The Project site and its surrounding areas include Holocene alluvium, Pleistocene alluvium, and Cretaceous Plutonic rocks of Peninsular Ranges. Pleistocene alluvium, located northeast and southeast of the Project site, has high paleontological activity because there are records of vertebrate fossils recovered at depths of 11 to 13 feet in this type of rock within the vicinity of the Project site (**Appendix D**). Cretaceous Plutonic rocks of Peninsular Ranges, located east of the Project site, have no paleontological sensitivity because this type of rock does not preserve fossils (**Appendix D**). Areas with younger Holocene sedimentary deposits (less than 5,000 years old), such as the Project site, are generally too young to have fossilized material and therefore have low paleontological sensitivity. However, Holocene sediments that have shallow Pleistocene alluvium (as shallow as 11 feet below ground surface) have potential for vertebrate fossils based on past discoveries.

There are no previously recorded fossil localities in the Project site at the Natural History Museum of Los Angeles County; however, one vertebrate locality, LACM 4540, which yielded a horse (*Equus* sp.) from Pleistocene alluvium deposits, was documented in the gravel pits of the San Jacinto Valley east of the Project site (**Appendix D**). Records from the Western Science Center also show several fossil localities approximately four miles northeast of the Project site of a fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and a horse (*Equus* sp.) (**Appendix D**).

Ground-disturbing activities in previously undisturbed portions of the Project site underlain by geologic units with a high paleontological sensitivity (i.e., Pleistocene alluvial deposits) may result in significant impacts to paleontological resources under Appendix G of State CEQA Guidelines. Impacts would be significant if construction activities result in the destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. The activities may include grading, excavation, or other activities that disturb substantial quantities of the subsurface geologic units with a high paleontological sensitivity.

Construction of the Project would require temporary ground disturbance that would impact 100 percent of the site lot (except Project facilities at the existing public parks). Ground disturbance would reach a maximum depth of seven feet during open cut trenching, up to 40 feet during “bore and jack” drilling, and 1,100 feet during well drilling. Well drilling would have negligible impacts on paleontological resources or unique geological features because the well drill auger has a small diameter which would limit disturbances to intact Pleistocene sediments. “Bore and jack” drilling would also have negligible impacts on paleontological resources or unique geological features because this type of ground disturbance does not typically remove observable geologic sediments. The Project site has Holocene deposits overlying Pleistocene sediments at a depth of approximately 11 feet (**Appendix D**). Fossiliferous deposits have the potential to occur at greater depths than the anticipated Project ground disturbance, which leaves low potential for encountering fossils, and impacts on paleontological resources are not anticipated. To ensure proper procedures are in place in the event of an unanticipated fossil discovery,

Mitigation Measure GEO-1 would be implemented during all construction phases of the Project. **Mitigation Measure GEO-1** would ensure any unanticipated fossil discovered onsite would be preserved, and potential impacts on paleontological resources would be less than significant.

Mitigation Measures:

GEO-1: Unanticipated Fossil Discovery. In the event of an unanticipated fossil discovery made during the construction of the Project, in accordance with SVP (2010) guidelines, it is the responsibility of any worker who observes the fossil within the Project site to stop work within the fossil's immediate vicinity and notify a qualified professional paleontologist. The paleontologist shall evaluate the discovery, determine the fossils significance, and decide if additional mitigation or treatment is needed. Work within the area of the fossil discovery will resume once the find is documented and authorization to resume construction work is given. Any significant paleontological resources discovered during construction monitoring will be prepared, identified, analyzed, and permanently curated in an approved regional museum repository.

3.8 Greenhouse Gas Emissions

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

Discussion

GHGs are pollutants that are known to increase the greenhouse effect in the earth's atmosphere thereby adding to global climate change impacts. Several pollutants have been identified as GHGs, and the State of California definition of a GHG in the Health and Safety Code, Section 38505(g) includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Water vapor

is also a GHG, however, it is short lived, and concentrations are largely determined by natural processes such as evaporation. Other GHGs such as fluorinated gases are created and emitted through anthropogenic sources. The most common anthropogenic sourced GHGs are CO_2, CH_4, and N_2O.

Measuring how much energy the emissions of one ton of a gas will absorb over a given period of time relative to the emissions of one ton of CO_2 is called the Global Warming Potential (GWP). CO_2e is the amount of GHG emitted multiplied by its GWP. CO_2 has a 100-year GWP of one; CH_4 has a GWP of 25; and N_2O has a GWP of 298.

In 2005, (EO) S-3-05 set GHG emission reduction targets:

- 2010 should have 2000 levels;
- 2020 should have 1990 levels; and
- GHG emissions should be 80 percent below 1990 levels by 2050.

Senate Bill (SB) 32, passed in 2016, required that the California Air Resources Control Board (CARB) include in its next update to the Assembly Bill (AB) 32 Scoping Plan, "ensure that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit no later than December 31, 2030." (EO) B-55 set a GHG emission reduction target for California to be carbon neutral by 2045.

CARB adopted the *Scoping Plan* in December 2008 and a *Scoping Plan Update* in December 2017. The *Scoping Plan* contains the strategies California will implement to achieve reduction of 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. In the *Scoping Plan*, "CARB recommends that lead agencies prioritize onsite design features that reduce emissions, especially from vehicle miles travelled (VMT), and direct investments in GHG reductions within the proposed Project's region that contribute potential air quality, health, and economic co-benefits locally."

The City of Moreno Valley has also produced both an energy *Efficiency and Climate Action Strategy* and a *Greenhouse Gas Analysis* in 2012. The Efficiency and Climate Action Strategy outlines and prioritizes numerous energy efficiency and energy reduction measures, while the Greenhouse Gas Analysis establishes goals and policies that incorporate environmental responsibility to reduce GHG emissions. The Greenhouse Gas Analysis sets a goal to reduce the City's emissions back to 1990 levels by 2020 which is equal to 798,693 metric tons CO_2e, which is consistent with the State's emissions reduction targets per AB 32 and SB 32.

The City of Moreno Valley is also a member of the Western Riverside Council of Governments (WRCOG). Several member governments of WRCOG are actively participating in the development of a Subregional CAP. However, the City of Moreno Valley has elected to utilize its existing *Efficiency and Climate Action Strategy*. In addition to the WRCOG CAP, the County of Riverside adopted a CAP in 2015 for unincorporated areas of Riverside County.

The County of Riverside adopted a CAP in 2015 to establish goals and policies that incorporate sustainability and GHG reduction targets into its management process. The County set a goal to reduce emissions to 1990 levels by 2020 in line with the State's AB 32 GHG reduction targets. The CAP was updated in 2019 to contain further guidance on Riverside County's GHG Inventory reduction goals, thresholds, policies, guidelines, and implementation programs including 2030 thresholds to reduce emissions to 40 percent below 1990 levels. In particular the CAP elaborates on the County's *General Plan* goals and policies relative to GHG emissions and provides a specific implementation tool to guide future decisions of the County. The County's CAP includes a review process procedure for evaluating individual project GHG impacts and determining the significance under CEQA. The County's CAP is qualified for CEQA tiering and streamlining of individual projects' CEQA review. The County's CAP has set a threshold of 3,000 metric tons (MT) CO_2e per year to be used to identify projects that, when combined with the modest efficiency measures (e.g., energy efficiency matching or exceeding the Title 24 requirements in effect as of January 2017; water conservation measures that match the California Green Building Standards Code in effect as of January 2017) are considered less than significant.

The City of Moreno Valley, EMWD, and the proposed Project lie within the jurisdiction of the SCAQMD. On December 5, 2008, the SCAQMD Board approved interim CEQA GHG significance thresholds for stationary sources, rules, and plans using a tiered approach for determining significance. Tier 3, the primary tier the SCAQMD board uses for determining significance, set a screening significance threshold of 10,000 $MTCO_2e$/year for determining whether a stationary source project would have a less than significant cumulative GHG impact (SCAQMD 2008b). While useful for a reference, this threshold is meant to apply to industrial projects where SCAQMD is the lead agency (Radlein, personal correspondence 2020). Therefore, for the purposes of this analysis, the County of Riverside screening level is used as a threshold to determine significance of the proposed Project under CEQA.

a) Less Than Significant Impact

The Project would emit both construction and operation GHG emissions. Construction is expected to last approximately 22 months, and the Project's life expectancy is 30 years. Construction impacts would include emissions associated with staging and site preparation; pilot boring and well construction; pipeline trenching and installation, and treatment facility construction. Operation emissions would result from regular well inspections and testing and routine treatment facility operations and maintenance. Further details can be found in *Section 2 Project Description*.

Modeling of air emissions from construction and operation was completed in CalEEMod version 2016.3.2 for construction of the wells, pipeline, and treatment facility. Details on construction, including timing, duration, equipment, and worker trips can be found in *Section 2 Project Description*. Operational emissions would result from the tanker truck trips for disposal of brine wastewater from the treatment facility (approximately five trips every four to five days) and O&M trips (bi-weekly visits by an EMWD operator to the

treatment facility, monthly routine maintenance at the treatment facility, monthly chemical delivery, annual inspection of the GAC Media, and monthly inspections of the wells). For modeling purposes, it was assumed O&M would result in one vehicle trip per day associated with ongoing activities. Operational emissions of GHG would result from energy consumption associated with the wells and treatment facility. Unlike criteria pollutants, GHG emissions are not regulated through stationary source permitting; therefore, CalEEMod assigns indirect GHG emissions associated with electricity consumption to individual projects. Total operational energy requirements, as detailed in **Table 2-2** and **Table 2-4**, is a maximum of 17,760 kWh/day, or 6,482,400 kWh/year. In addition to the equipment identified in **Table 2-2** and **Table 2-4,** each well and treatment facility site would be provided with a portable generator connection, at a minimum, for emergency scenarios. Emergency generators may be installed at the well sites at a later date. For the purposes of this analysis, it was assumed that each emergency generator would be diesel powered and would operate 24 hours in any given year. In CalEEMod, emergency generators are modeled as stationary sources of GHG emissions. No or negligible energy requirements are expected for the operation of the pipelines. Other Project details necessary for GHG emission modeling were obtained from CalEEMod and design engineer estimates (e.g., equipment horsepower, load factors, fleet mix, and vehicle emissions factors).

As explained above, the Riverside County CAP has set a threshold of 3,000 $MTCO_2e$ to identify small projects that are considered less than significant and would not require mitigation. The results of the inventory for GHG emissions, as shown in the CalEEMod output tables in **Appendix A**, are presented in **Table 3-12** along with the significance threshold. Consistent with the methodologies in the County CAP, total GHG emissions from construction have been amortized over the 30-year lifetime of the Project.

Table 3-12: Proposed Project GHG Emissions per Year ($MTCO_2e$/year)

Source	$MTCO_2e$
Energy	1,422
Stationary	6
Mobile	844
Area	Negligible
Construction (amortized over 30 years)	96
Total	**2,368**
Threshold	3,000
Exceed Threshold?	*No*

Note: CalEEMod's default CO_2e intensity factor for Southern California Edison is 702.44 lb/MWhr. However, recent information provided by SCE (2019) specifies a CO_2e intensity factor of 467.38 lb/MWhr for SCE, which was used in this analysis.

During construction, the proposed Project would emit a total of 2,872 $MTCO_2e$ (96 $MTCO_2e$ per year when total construction emissions are divided over the 30 year lifetime of the Project). The Project would adhere to existing energy efficiency requirements during construction, including CARB's In-Use Off-Road Diesel-Fueled Fleets Regulations

that limit vehicle idling time to five minutes, restrict adding vehicles to construction fleets that have lower than Tier 3 engines, and establish a schedule for retiring older and less fuel-efficient engines (CARB 2019b).

Long-term GHG emissions from the proposed Project would result from energy consumption and mobile sources. The State of California has set targets for renewable energy from the energy sector through the Renewable Portfolio Standard. The Renewable Portfolio Standard directs energy utilities to source half of their electricity sales from renewable sources by 2030 (CEC 2017). To date, SCE has met or exceeded the Renewable Portfolio targets (SCE 2017). Total energy related GHG emissions are 1,422 $MTCO_2e$ annually, which is below the 3,000 $MTCO_2e$ threshold. Given that SCE has exceeded their Renewable Portfolio targets, and total Project related emissions (inclusive of energy related emissions) are well below the threshold, impacts are less than significant.

b) Less than Significant Impact

California's 2017 Climate Change Scoping Plan focuses on reducing energy demand, and GHG emissions, that result from mobile sources and land use development. The proposed Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl. The Scoping Plan also recognizes that about two percent of the total energy used in the state is related to water conveyance; it calls for, "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination." The proposed Project utilizes local water supplies thus requiring less energy than alternative water supplies such as imported water.

The proposed Project would not interfere with existing City, County, or regional programs intended to reduce energy and improve water use efficiency. It would not result in emissions higher than the Riverside County CAP significance screening thresholds. The proposed Project would not, therefore, conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Impacts would be less than significant, and no mitigation would be required.

Mitigation Measures: None required or recommended.

3.9 Hazards and Hazardous Materials

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	[ ]	[ ]	[X]	[ ]
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	[ ]	[X]	[ ]	[ ]
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	[ ]	[X]	[ ]	[ ]
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	[ ]	[ ]	[X]	[ ]
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	[ ]	[ ]	[ ]	[X]
f) Impair implementation of or physically interfere with an	[ ]	[X]	[ ]	[ ]

adopted emergency response plan or emergency evacuation plan?				
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	[ ]	[ ]	[X]	[ ]

Discussion

a) Less than Significant Impact

Construction machinery (i.e. cranes, trucks, excavators) would be used throughout construction in order to drill, excavate, grade, install pipelines, and build facility buildings. This equipment may leak small amounts of petroleum products (i.e. gasoline, diesel) and automotive fluids during transportation, equipment use, and storage. Additionally, other chemicals (i.e. paints, adhesives, solvents) would be required during construction. The treatment/blending facility would include GAC contactors, a blending facility, a potable water distribution pump station and a chlorine residual injection system. The chemical storage room at the facility would also house an onsite sodium hypochlorite generation system and store of aqueous ammonia. These two chemicals (the salt and aqueous ammonia) would be delivered approximately once a month.

To minimize the risks of exposure to hazardous materials from routine use or accident conditions, federal, State and local regulations have been put into place to regulate hazardous material use, storage, transportation, and handling. EMWD would be required to be in compliance with all applicable federal, State, and local regulations pertaining to hazardous materials (Federal Code Title 40 and 49; Occupational Safety and Health Administration (OSHA) 29 CFR 1910; California code section 5001, 5401, 5701, and 25507; California Health and Safety Code Division 20, Chapter 6.5, Article 6.5, Article 6.6, and Article 13; and Riverside County ordinance 651). Conformance with the above regulations would include such things as a SWPPP to address the discharge of contaminants (including construction-related hazardous materials) through appropriate BMPs. While specific BMPs would be determined during the SWPPP process based on site-specific characteristics (equipment types, etc.), they would include standard industry measures and guidelines contained in the NPDES Construction General Permit text. Conformance with federal hazardous materials transportation law (49 U.S.C. 5101 et seq.) and California Health and Safety Code Division 20, Chapter 6.5, Article 6.5 would require precautionary measures be taken during the routine transport of hazardous materials, such as testing and preparation of a transportation safety plan. According to California Health and Safety Code Division 20, Chapter 6.5, Article 13, used oil that may be produced from construction or operation of the Project would be recycled. With compliance with existing regulations, impacts would be less than significant and no mitigation would be required.

b) Less than Significant with Mitigation Incorporated

There are sensitive receptors surrounding potential Project sites, as stated in Section *2.4 Environmental Setting*, which increases the risk of impact. **Mitigation Measure HAZ-1** would minimize the risk of hazardous material exposure through material use and accidents by requiring EMWD and its construction contractor to develop a Hazardous Materials Management and Spill Prevention and Control Plan to ensure project-specific contingencies are in place. With the implementation of **Mitigation Measure HAZ-1** the impacts from hazardous materials to the public or the environment from potential accidents would be less than signification.

During operation of the Project, there is low risk of an accidental chemical spill during transport or use at the treatment facility. The Project would be required to comply with various existing regulations (see response to "a" above) that would minimize the risk of accidental hazardous material release during operations. In addition, a Hazardous Materials Business Plan, Emergency Response Plan, and Risk Management Plan would need to be prepared and implemented based on the State of California Accidental Release Prevention (CalARP) requirements. The CalARP Program incorporated and modified the Federal Risk Management Plan and designed it to minimize harm to people and the environment through enforcing regulations that minimize risks for facilities that handle hazardous material. Safety measures would be put in place to ensure proper storage containers, safety labeling, materials needed to readily absorb spills, and training for site workers. Impacts would be less than significant and mitigation would not be required.

c) Less than Significant with Mitigation Incorporated

There are existing schools, as found in Section 2.5 Environmental Setting, located within one-quarter mile of the Project sites and pipeline locations. During operation, the treatment facility would store chemicals and require transportation of hazardous chemicals to the facility once a month. Both treatment facility option sites are located within one-quarter mile of multiple schools. As explained under responses "a" and "b" above, the treatment/blending facility would be compliant with local regulations, and there would be less than significant impacts related to hazardous material release associated with long-term Project O&M activities. For operation of pipelines and extraction wells, no hazardous materials would be handled or emitted on a regular basis. Impacts would be less than significant. During construction, there would be emissions of toxic air pollutants, such as diesel particulate matter, within one-quarter mile of schools. As explained in Section 3.3 Air Quality, emissions would be below SCAQMD LST thresholds and less than significant. As explained in response to "b" above, there is a risk of accidental release of hazardous materials during project construction, including within one-quarter mile of schools. Implementation of Mitigation Measure HAZ-1 would reduce impacts to less than significant.

d) Less Than Significant Impact

Regulatory records were searched through the SWRCB GeoTracker database (SWRCB 2015) and the DTSC EnviroStor database (DTSC 2020). These databases provide information on potential, confirmed, and closed hazardous waste and substances sites in California. None of the Project locations are proposed on a site that is included on a list of hazardous materials sites per Government Code Section 65962.5 (DTSC 2020 and SWRCB 2015).

Recent and currently active clean-up sites in the Project area are summarized below:

- M&M Dry Cleaners located at 23080 Alessandro Boulevard (Envirostor ID # T10000004432) - This site is located approximately 0.62 mile from Cactus Corridor Well 1 Option #1 Site, the closest proposed Project facility. The site has been under investigation and remediation for the release of dry cleaning solvent, tetrachloroethene (also known as perchloroethylene or PCE), in soil and groundwater. The site has been remediated and confirmation soil sampling and groundwater monitoring is ongoing. The case has not yet been closed by the RWQCB.
- ARCO #6345 located at 2624 E Alessandro Boulevard (Envirostor ID # T0606500497) – This Leaking Underground Storage Tank (LUST) site is located approximately 2.1 miles from Cactus Corridor Well 1 Option #1 Site, the closest proposed Project facility. The site has undergone remediation for release of petroleum hydrocarbons in soil, soil vapor and groundwater. Confirmation soil sampling and groundwater monitoring is ongoing. The case has not yet been closed by the RWQCB.
- Shell Moreno located at 13260 Old Frontage Road (Envirostor ID # T0606500255) – This LUST site is located approximately 2.26 miles from Cactus Corridor Well 1 Option #1 Site, the closest proposed Project facility. The site has undergone remediation for release of petroleum hydrocarbons (gasoline) in soil and groundwater. Underground storage tanks were removed, and monitoring was completed. The RWQCB issued a notice of case closure in May 2019.
- MOBIL #18-A3E located at 24440 Alessandro Boulevard (Envirostor ID # T0606599291) – This LUST site is located approximately 0.025 mile (130 feet) from the Alternative Raw Water Pipeline alignment in Indian Street, and 0.076 mile (400 feet) from Cactus Corridor Well 3, Option #1 Site, the closest proposed project facilities. The site has undergone remediation for release of petroleum hydrocarbons (gasoline) in soil and groundwater. Underground storage tanks were removed, and monitoring was completed. No further action /case closure was issued by the RWQCB in May 2019.
- Shell Perris Boulevard located at 15980 Perris Boulevard (Envirostor ID # T0606517323) – This LUST site is located 0.2 mile from the Alternative Pipeline Alignment on Santiago Drive and Perris Boulevard, and just beyond one-quarter mile for the Santiago Well Site and Option 3 Treatment facility site. The site has undergone remediation for release of hydrocarbons in soil and groundwater. Groundwater monitoring is ongoing. Recent correspondence from the Santa Ana RWQCB (letter

from Hope Smythe, RWQCB Executive Director dated December 23, 2019) requests that the site owner conduct a short-term groundwater extraction test to demonstrate that the areal extent and mass of the residual plume of MTBE- and TBA-affected groundwater is limited. The RWQCB is interested in better understanding the stability of the residual plume and the results of EMWD hydrological modeling to determine if there is any potential for the plume to be affected by EMWD's proposed Santiago well site.

Because soil and groundwater at the cleanup sites have been remediated and closed, or are being remediated and monitored, no significant hazards to the public would be expected. Compliance with RWQCB requirements for any ongoing monitoring would ensure that impacts to the public would be less than significant. Additionally, none of the proposed Project facilities would be located on a clean-up site undergoing or awaiting remediation. Impacts would be less than significant.

e) No Impact

The Project area is near the MARB, which has its own airport. The Project area is located in Zone E of the Airport Influence Area for the MARB, which is the outer limits of the influence area (Riverside County Airport Land Use Commission 2014). Zone E is the outer portion of the flight corridor and is only occasionally used, which leads to low noise disturbances. Additionally, there are no restrictions on development for this outer area. Even so, the Project would not include tall structures that could interfere with airport safety measures. There would be no impacts.

f) Less than Significant with Mitigation Incorporated

The City of Moreno Valley Emergency Operations Plan (EOP) provides guidance for the City's response to extraordinary emergency situations associated with natural, man-made and technological disasters. While the EOP is a preparedness document and is designed to be read, understood, and exercised prior to an emergency, emergency evacuation plans should be viewed as living documents because communities change and integrating the needs of individuals with differing access and functional needs is a dynamic process. The Office of Emergency Management (OEM) is responsible for working and communicating with local community stakeholders to practice, review, revise, and update plans to reflect changes in technology, personnel, and procedures (City of Moreno Valley 2019a).

The City of Moreno Valley Local Hazard Mitigation Plan (LHMP) is designed to reduce or eliminate long-term natural or man-made hazard risks and communicate the City's corresponding mitigation strategy. Components of the plan include hazard identification, asset inventory, risk analysis, loss estimation, and a mitigation strategy to reduce the effects of hazards in the City. Figure 12-2 of the LHMP shows the Moreno Valley Evacuation Routes Map 2016 (City of Moreno Valley 2017).

During construction of the Project components, roads would be temporarily altered, blocked, or impaired such that they would conflict with the adopted emergency response

plan and emergency evacuation plan (the City EOP and LHMP). Major roads that would be impacted by installation of the proposed pipelines include Kitching Street, Perris Boulevard, Alessandro Boulevard, Bay Avenue, Cottonwood Avenue, Indian Street, and Heacock Street. With the implementation of **Mitigation Measure TRA-1**, coordination with local emergency responders would be required regarding lane closures. During operation, the Project facilities would require monthly site visits for the wells and treatment facility as well as a monthly chemical delivery. These minimal operational activities would not interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant with the incorporation of **Mitigation Measure TRA-1**.

g) Less than Significant

The proposed Project would not involve the installation or maintenance of infrastructure that is typically associated with fire risk (*see Section 3.20 Wildfire*). Additionally, the proposed Project sites are all located within the Moreno Valley Local Responsibility Area (LRA) and designated as a non–Very High Fire Hazard Severity Zone (VHFHSZ) (FRAP 2009). Therefore, the proposed Project would have a less than significant impact on exposing people or structures to a significant risk of loss, injury or death involving wildland fires.

Mitigation Measures:

TRA-1: Traffic Control Plan (see *Section 3.17*)

Mitigation Measure HAZ-1: Hazardous Materials Management and Spill Prevention and Control Plan. Before construction begins, EMWD shall prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and water operations. The Plan will be applicable to construction activities and will establish policies and procedures according to applicable codes and regulations, including but not limited to the California Building and Fire Codes, and federal and OSHA regulations. The Plan will include, but is not limited to the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

3.10 Hydrology and Water Quality

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	[ ]	[ ]	[X]	[ ]
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?	[ ]	[ ]	[X]	[ ]
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	[ ]	[ ]	[X]	[ ]
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	[ ]	[ ]	[X]	[ ]
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	[ ]	[ ]	[X]	[ ]

iv) impede or redirect flood flows?	[ ]	[ ]	[X]	[ ]
In flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?	[ ]	[ ]	[X]	[ ]
Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	[ ]	[ ]	[X]	[ ]

Discussion

Surface Water

The proposed Project is located in the Santa Ana River Basin, which includes portions of San Bernardino, Riverside, and Orange counties. Within the Basin, the Project is located in the San Jacinto River Watershed, which drains approximately 540 square miles into Canyon Lake. Canyon Lake discharges into Lake Elsinore, and Lake Elsinore discharges into a tributary of the Santa Ana River; however, discharges from these two lakes are very rare. Drainage in the City of Moreno Valley is provided by local storm drain channels (including the Sunnymead Channel and Kitching Channel) which convey storm flows to the Perris Valley Storm Drain, and subsequently into the San Jacinto River. (City of Moreno Valley 2006b).

The RWQCB prepares and maintains the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The Basin Plan sets water quality standards in the Santa Ana River Basin by establishing beneficial uses for specific water bodies and designating numerical and narrative water quality objectives. Intermittent beneficial uses of the San Jacinto River downstream of the Project area have been identified, and include municipal and agricultural water supply, groundwater recharge, recreation, and freshwater habitat and wildlife uses (Santa Ana RWQCB 2019). Beneficial uses of Canyon Lake and Lake Elsinore include municipal and agricultural supply, recreation, commercial uses, and freshwater habitat and wildlife uses (Santa Ana RWQCB 2019).

The State Water Resource Control Board also maintains the 303(d) List of Impaired Water Bodies, which identifies water bodies where water quality indicators exceed acceptable thresholds. The Project sites do not directly drain to 303(d)-listed impaired water body (SWRCB 2019). However, Lake Elsinore appears on the 303(d) list for the following water quality issues: nutrients, organic enrichment/low dissolved oxygen, toxicity, dichlorodiphenyltrichloroethane (DDT), and polychlorinated biphenyls (PCBs) (SWRCB 2016). Canyon Lake is 303(d)-listed for nutrients (SWRCB 2016). The Santa Ana RWQCB develops and implements total maximum daily loads (TMDLs) to address water quality impairments and help achieve water quality standards. Water quality is also governed through NPDES stormwater discharge permits issued to municipalities, construction sites, and industrial facilities to control non-point-source pollutants in stormwater discharges to surface waters.

The U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA) identifies flood hazard areas on Flood Insurance Rate Maps prepared for the National Flood Insurance Program. These areas, known as Special Flood Hazard Areas (SFHAs), are defined as areas where there is a one percent chance of flooding in any given year (also referred to as a 100-year flood). FEMA maps also identify moderate flood hazard areas, which are areas outside the one-percent flood area where there is a 0.2 percent chance of flooding in a given year (also referred to as a 500-year flood). Areas outside the 100-year and 500-year flood zones are considered areas of minimal flood hazard. Existing drainage channels in the Project area contain the 100-year flood (i.e., along Kitching Street, near the intersection of Alessandro Boulevard and Heacock Street, and along Camino Flores). A flood zone also exists just south of Iris Avenue near the Moreno Valley Ranch community and its associated lake. See **Figure 3-1**. None of the proposed well and treatment facility sites are located in a flood zone.

Groundwater

The Project site overlies the San Jacinto Groundwater Basin (California Department of Water Resources [DWR] Basin Number 8-05). The basin generally encompasses the areas of Moreno Valley, Perris, Hemet, San Jacinto, Sun City, and Menifee, and has an estimated storage capacity of roughly three million acre-feet (DWR 2006). The Basin has been divided into smaller management areas. The Perris North Groundwater Management Zone underlies the Project site.

The San Jacinto Groundwater Basin is designated by DWR as a high priority basin. The eastern portion of the Sub-Basin is adjudicated, but the western portion (which includes the Perris North Groundwater Management Zone) is subject to the provisions of the Sustainable Groundwater Management Act (SGMA). EMWD acts as the Groundwater Sustainability Agency (GSA) for the western portion of the Sub-Basin. The GSA is required to develop a GSP by 2022. The GSP will document basin conditions, and basin management will be based on measurable objectives and minimum thresholds defined to prevent significant and unreasonable impacts on the sustainability indicators defined in the GSP.

The Santa Ana RWQCB designates beneficial uses for the San Jacinto Groundwater Basin, including the Perris North Groundwater Management Zone. Designated beneficial uses are municipal and agricultural supply, industrial service supply, and industrial process supply. Groundwater in the Perris North Groundwater Management Zone is contaminated. COCs include PCE, Volatile Organic Compounds (VOCs), nitrate, perchlorate, TDS, fluoride, and manganese (co-mingled VOC-Nitrate Plume).

The Perris North Basin is a source of potable water for EMWD. Active potable water wells within the Project area include EMWD's Well 55 and Well 59. EMWD Well 56 is currently shut down due to detection of per- and polyfluoroalkyl substances (PFAS). The groundwater aquifer in the Project area has been a source of potable water for nearly 100 years. However, over the last several decades, contaminates in the groundwater have resulted in numerous potable wells being shut down and unavailable for potable use. The

Project area was primarily used for agricultural production, but over the last several decades it has transitioned to primarily urban uses.

The original source of potable water for the MARB was groundwater wells located on the base. Over time, the wells were shut down and the water supply was converted to municipal water due to contamination of the groundwater. EMWD has had 10 potable water wells shut down over the last two decades due to groundwater contamination. When local groundwater cannot be used due to contamination, EMWD must replace this water supply with imported water from MWD. The groundwater contamination is nonpoint source pollution associated with previous agricultural operations, equipment maintenance, and urban activities in the region. Potential chemicals of concern (COCs) in the Basin aquifer include volatile organic compounds (VOCs), perchlorate, nitrate, fluoride, manganese, and, tetrachloroethylene (PCE). Potential contamination sources were identified by EMWD through implementation of the DWSAP, as well as GeoTracker and EnviroStor database research, in developing a comingled plume map**.**

EMWD is not currently treating contaminated groundwater in the Project area but has been developing plans to mitigate the contaminated groundwater and prevent the flow of contaminated groundwater toward areas where the groundwater is not contaminated. EMWD has one potable well, Well 59, that is currently being equipped with GAC to address contamination from perfluorinated compounds (PFCs). EMWD Well 55 does not require treatment for use in the potable water system. The Air Force/EPA have ongoing efforts to address point source plumes coming from MARB, but their efforts are separate and distinct from EMWD plans.

a) Less than Significant Impact

The proposed Project would disturb an area greater than one acre in size and would therefore be required to obtain coverage under the NPDES Stormwater Construction General Permit during Project construction. Each of the proposed well and treatment facility site options are at least two acres in size, with the exception of Cactus Corridor Well 1 Option 1, which is half of an acre. The total limits of disturbance of the Project, including all site options, is 34.22 acres. As part of the Permit conditions, EMWD would be required to prepare a SWPPP, which would identify BMPs to control sediment and other construction-related pollutants in stormwater discharges. Typical BMPs include housekeeping practices such as proper waste disposal, covering stockpiles with tarps, containment of building materials, and inspection of construction vehicles to prevent leaks or spills. Contractors would be required to comply with the Construction General Permit throughout construction. Construction dewatering and well test water would be either discharged to land in accordance with RWQCB Waste Discharge Requirements for construction dewatering; or discharged to the local storm drain system per Riverside County Flood Control and Water Conservation District (RCFCWCD) requirements; or discharged to the EMWD sewer system. Compliance with these permits, including implementation of BMPs would ensure the project would not violate water quality standards or waste discharge requirements, nor significantly degrade surface water quality. Impacts on surface water quality would be less than significant.

Operation of the proposed Project would consist of extracting and treating groundwater from the Perris North Groundwater Management Zone. The extracted groundwater would be treated, blended and conveyed for distribution in EMWD's potable water system. Extraction of contaminated water proposed by the Project would assist in reducing the migration of the groundwater contaminants and help remediate groundwater areas of concern in the Perris North Basin. Operation of the Project would help improve and protect groundwater quality of the Perris North Basin over time and is considered a beneficial effect. No adverse impacts on groundwater quality would be expected.

b) Less than Significant Impact

The proposed Project would extract and treat contaminated groundwater for beneficial use. EMWD has been managing groundwater quantity and quality in the western portion of the San Jacinto Groundwater Basin via the Annual West San Jacinto Groundwater Management Plan since 1995; EMWD prepares annual reports documenting the implementation of the plan and activities in groundwater management zones. In addition to the existing groundwater management program, EMWD is required to complete a GSP by January 2022. Water levels were drawn down to historic lows in the middle of the 20th century and have been slowly rising since that time. The reasons for the rise are currently being studied; however, several factors include increased sales of EMWD recycled and municipal water; reduced groundwater extraction, primarily due to less agricultural water use; incidental recharge from EMWD recycled water facilities; and, for the portions of the Perris North Sub-Basin downstream of Lake Perris, seepage from Lake Perris. The Project is part of EMWD's ongoing groundwater management in the basin. The Project would extract approximately 3,700 AFY in a manner consistent with the GSP, currently under development, which will be completed one year prior the Project becoming operational. The SGMA requires that groundwater be produced in a sustainable manner within 20 years of GSP adoption. The groundwater extracted as part of the Project would offset the use of imported water supplies. The Project would produce water from the basin in a sustainable manner consistent with the San Jacinto Groundwater Management Plan, the GSP and consistent with the siting criteria described in *Section 2.4 Project Siting Criteria*. Therefore, the Project would not substantially decrease groundwater supplies or interfere with groundwater recharge and would have a less than significant impact.

c) Less than Significant Impact

The pipeline components of the Project would be constructed in existing roadways and thus would not increase total impervious surface area. All potential well and treatment facility sites are currently covered by bare dirt, grass, or landscaping. Project construction may result in disturbance or exposure of soil that could be subjected to erosion and sedimentation during a rain event. However, implementation of BMPs as required by the NPDES Stormwater Construction General Permit and SWPPP would limit erosion and sedimentation. The proposed wells and treatment facility would replace existing pervious surfaces with pavement and other facilities that would lead to slightly increased surface runoff from sites. The impervious extraction well footprints would be minimal and would have a negligible effect on surface runoff. However, the treatment facility would be

designed in accordance with Riverside County drainage design requirements to prevent potential for flooding on- and off-site and adhere to applicable NPDES municipal storm water permit requirements to control water quality in site runoff. The proposed pipeline alignments may be required to cross existing concrete-lined drainage channels. However, in these locations, pipelines would be constructed using trenchless methods (e.g., jack and bore). Using this technique, ground surface disturbance would not occur, except at the pits used to site the jack and bore equipment (which would be located away from the channels).

Project facilities would have relatively minor above ground surface profiles and would be entirely unoccupied other than occasional short term visits by EMWD maintenance staff. As a result, the proposed Project facilities would not impede or redirect flood flows. The Project would not alter drainage patterns of the sites or Project area, cause substantial erosion, substantially increase surface runoff, generate runoff in excess of the existing storm drainage systems, or be a source of polluted runoff. Therefore, the proposed Project would have a less than significant impact.

d) Less than Significant Impact

A tsunami is a large ocean wave, caused by earthquakes or major ground movement. The proposed Project site is located approximately 40 miles from the Pacific Ocean; at this distance, a tsunami would not impact the Project vicinity. A seiche is a large wave generated in an enclosed body of water such as a lake, which is also typically caused by an earthquake. Approximately 500 feet south of the southernmost well site (Cactus Corridor East Well 2, Option 1), lies the Moreno Valley Ranch community, which is situated around a 35-acre lake; however, potential for a damaging seiche to be generated at this lake is considered to be low. There are no significant documented seiche hazards for any water bodies within Riverside County (County of Riverside, 2014). Additionally, the well sites would not house sources of pollutants that could be released in the event of inundation (although the treatment/blending facility would). Perris Reservoir is located south of the Project area (approximately two miles south of the southernmost well site). Due to the distance between the reservoir and the Project site, the potential for inundation by seiche is low. As discussed in *Section 3.9 Hazards and Hazardous Materials*, CalARP requires that the treatment/blending facility have plans in place which would ensure safe handling, transport, and storage of hazardous materials (i.e., a Hazardous Materials Business Plan, Emergency Response Plan, and Risk Management Plan). With these plans in place, inundation of the treatment/blending facility would not cause releases of pollutants.

According to FEMA maps (see **Figure 3-1**), areas near the Project sites that fall within the 100- or 500-year floodplain are the storm channel that travels along Kitching Street, the storm channel that travels southwest across Cottonwood Avenue to the intersection of Heacock Street and Alessandro Boulevard, and the storm channel along Camino Flores (FEMA 2008) which are sized to contain the 100-year flood. Areas outside the storm channels themselves, including well and treatment facility sites, are not located in flood areas. Therefore, risk of floods inundating these sites is low. Additionally, once

operational the Project would remove existing contamination from the groundwater, which would reduce the risk of pollutant release in the event of heavy rains or flooding. The Project sites are unlikely to become inundated and the potential for release of pollutants is low. Therefore, the impact would be less than significant.

e) Less than Significant Impact

As noted previously, the Basin Plan sets water quality objectives for the Project area. Water quality thresholds identified in the Basin Plan are intended to reduce pollutant discharge and ensure that water bodies are of sufficient quality to meet their designated beneficial uses. The Project would not conflict with the water quality standards outlined in the Basin Plan or worsen water quality conditions in any 303(d)-listed water body. As discussed above, pollutant discharge during construction would be avoided via compliance with the Construction General Permit and SWPPP and NPDES permits for construction dewatering and well test water discharges. Once operational, the Project would extract and treat groundwater, which would then be conveyed for use in EMWD's service area. The Project would not discharge extracted or treated water. The Project would not be a source of pollutants for downstream water bodies (e.g., San Jacinto River, Canyon Lake, Lake Elsinore). Therefore, the proposed Project would not conflict with the Basin Plan.

Under SGMA, a GSP must be prepared for the San Jacinto Groundwater Basin. The EMWD Board of Directors is the GSA for the West San Jacinto Groundwater Basin and is responsible for development and implementation of a GSP. The GSP must be completed by January 2022 per SGMA regulations, which would be prior to the start of Project operation. The GSP will establish sustainability indicators for the groundwater basin; however, no indicators or thresholds have been established to date. Therefore, the proposed Project would not conflict with the GSP. Currently, groundwater in the Project area carries contaminants and the groundwater table is elevated; the Project is expected to aid in alleviating these issues by extracting and treating groundwater for potable use. The Project would not conflict with applicable water quality control plans or groundwater management plans, and therefore its impact would be less than significant.

Mitigation Measures: None required or recommended.

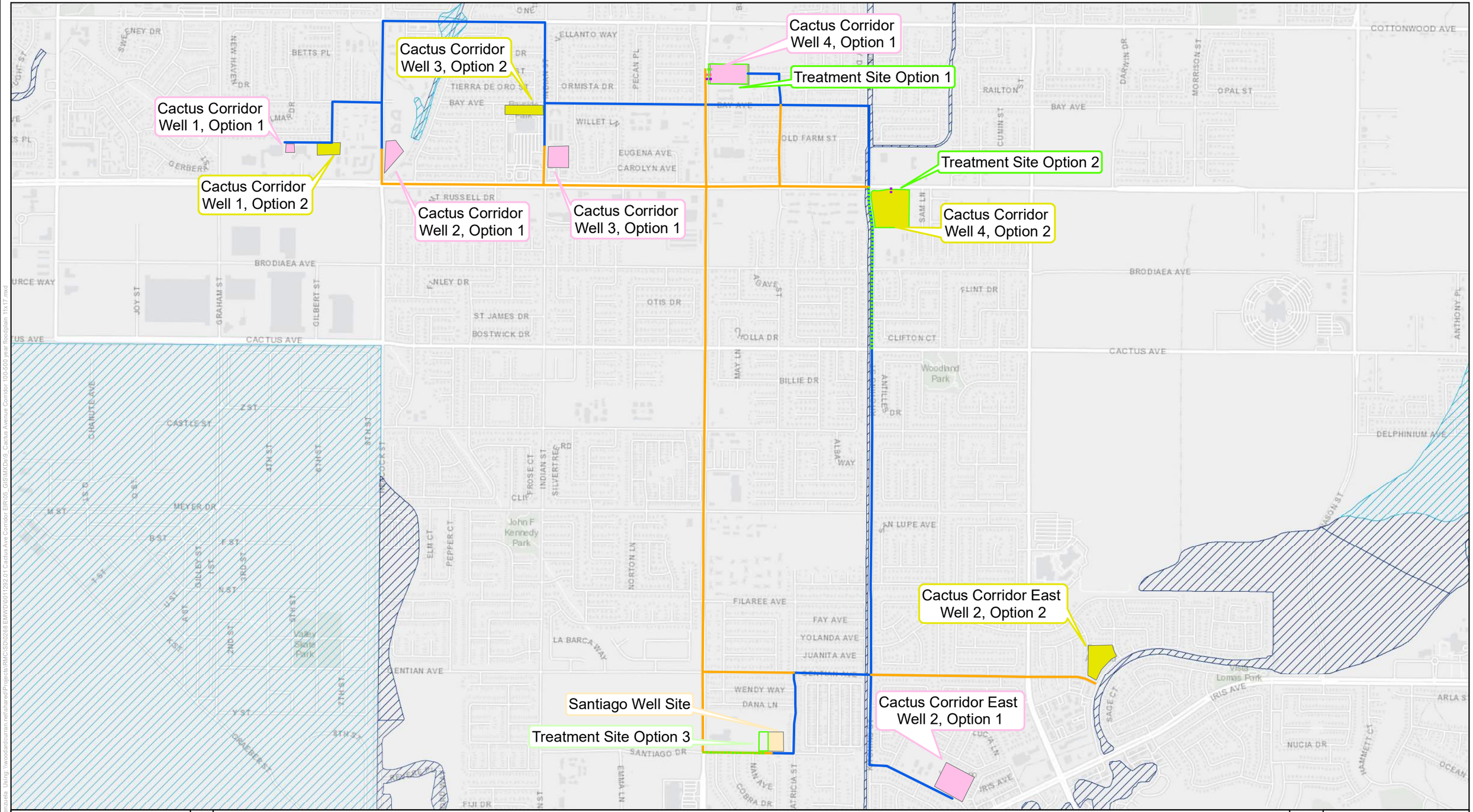

Figure 3-1
FEMA National Flood Hazard Layer
Cactus Avenue Corridor Groundwater Wells Projct IS/MND

Legend

- Option 1
- Option 2
- Santiago Well Site
- Treatment Locations
- Option 1 Raw Water Pipeline Corridor
- Alternative Raw Water Pipeline Corridors
- Blend Water to Treatment
- Brackish Water to Sewer Pipeline
- Treated Water Pipeline to Distribution

Flood Hazard Zones

- 100-year flood zone
- 500-year flood zone

N

WOODARD & CURRAN

Map Created: March 2020

0 0.075 0.15 0.3 Miles

3.11 Land Use and Planning

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Physically divide an established community?	[ ]	[ ]	[X]	[ ]
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	[ ]	[ ]	[ ]	[X]

Discussion

The proposed Project is located in the City of Moreno Valley. Land use in the City is governed by the zoning designations established in the General Plan and by municipal ordinances that outline acceptable uses in each zone. According to the City of Moreno Valley Land Use Map and Zoning Map, land use designations at the proposed potential well sites are neighborhood commercial, office, public facilities, and open space/park uses (City of Moreno Valley 2019b and 2019c). Both of the potential treatment facility sites are zoned for office use. The zoning for each potential well site and treatment facility site are summarized in **Table 3-13**. Pipelines would be constructed in existing roadway rights-of-way. The facilities associated with the proposed Project would be considered "public utility stations, yards, wells and similar facilities" under Title 9 of the Moreno Valley Municipal Code (City of Moreno Valley n.d.a). Such facilities are permitted in areas zoned as open space with a conditional use permit. Wells and treatment facilities are permitted in areas zoned for neighborhood commercial, office, and public use, provided that they are not within 300 feet of a residence or residential use. If facilities are located nearer to residences, a conditional use permit is needed. However, according to California Government Code Section 53091(d) and (e), building and zoning ordinances of a county or city do not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water.

Table 3-13: Zoning and Land Use Designations at Potential Well and Treatment Facility Sites

Site	Land Use	Zoning
North Sub-Area		
Well 1, Option 1	Commercial	Neighborhood Commercial
Well 1, Option 2	Commercial	Neighborhood Commercial

Site	Land Use	Zoning
Well 2, Option 1	Office	Office
Well 3, Option 1	Commercial	Neighborhood Commercial
Well 3, Option 2	Open Space	Open Space/Park
Well 4, Option 1/Treatment Facility Option #1	Residential/Office	Office
Well 4, Option 2/Treatment Facility Option #2	Residential/Office	Office
East Sub-Area		
Santiago Well Site/Treatment Facility Option #3	Public Facilities	Public Facilities
Well 2, Option 1	Open Space	Open Space/Park
Well 2, Option 2	Open Space	Open Space/Park

a) Less Than Significant Impact

The proposed Project facilities would be constructed within established communities. The pipelines would be constructed in existing roadway rights of way and would temporarily affect adjacent land uses through increased dust, noise, and traffic, but impacts would end upon completion of construction, and roadways would be restored to pre-construction condition. All of the well sites currently consist of vacant, disturbed land or public parks with landscaped open space. The wells would have minimal footprints (roughly 20,000 square feet per site) and would not create a physical barrier in the existing communities. The treatment/blending facility site option on Perris Boulevard is currently vacant and located in an existing community comprised of a mix of residential and commercial land uses. The treatment facility site option at Kitching Street is also vacant, and surrounded by office, residential, and commercial land uses (including a school, zoned as office, north of the site across Alessandro Boulevard). The treatment/blending facility site on Santiago Drive is also vacant and surrounded by residential and public facilities land uses. Construction of a treatment/blending facility at each site would not divide the existing surrounding communities. According to the siting criteria, described in *Section 2.4 Project Siting Criteria*, the sites would be accessible by existing public roadways and would not develop new roads that could divide an established community. The proposed Project would not permanently interfere with the pedestrian, bicycle or vehicle circulation of the neighborhoods or community. The proposed Project would have a less than significant impact related to physically dividing an established community.

b) No Impact

The proposed Project would construct wells at existing vacant sites that have various land use designations, including neighborhood commercial, office, open space, and public uses. The well sites, if selected for the proposed Project, would be owned by EMWD and operated for the purposes stated in *Section 2.1* Project Overview. No other land use would be constructed at the site in the future. The wells and the treatment facility would have a footprint of roughly 20,000 square feet and would prevent the remainder of the chosen site to be developed for its zoned purpose. However, under the City of Moreno Valley's zoning ordinance, facilities such as wells and treatment facilities are permitted at the proposed sites. Therefore, the proposed Project would not conflict with the City of Moreno Valley's zoning policies.

The City of Moreno Valley is located within the Western Riverside MSHCP. However, EMWD is not a participant in the MSHCP, and is therefore not subject to its conditions. The proposed Project would be implemented entirely within disturbed lands within the City of Moreno Valley; it would not impact criteria resource areas identified in the MSHCP. Therefore, the Project would not conflict with applicable land use plans, policies, or regulations intended to avoid or mitigate an environmental effect. No impact would occur.

Mitigation Measures: None required or recommended.

3.12 Mineral Resources

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	[ ]	[ ]	[ ]	[X]
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	[ ]	[ ]	[ ]	[X]

Discussion

The Surface Mining and Reclamation Act of 1975 (SMARA) mandates a process for classification and designation of lands containing potentially important mineral deposits. Classification is carried out by the California Geological Survey (CGS) State Geologist and designation is a function of the CGS State Mining and Geology Board. Lands are given a priority listing through classification into Mineral Resource Zones (MRZs). These MRZs are based on geological appraisals which include the use of literature, geological maps, and publications and data from the CDOC Division of Mines and Geology, USGS, the former U.S. Bureau of Mines, and the U.S. Bureau of Land Management. It also includes site investigations that determine the chemical and physical components of the area. An area can be classified as:

- Areas of Identified Mineral Resource Significance
- Areas of Undetermined Mineral Resource Significance
- Areas of Unknown Mineral Resource Significance
- Areas of No Mineral Resource Significance

The Division of Mines and Geology has identified Moreno Valley has an area with no significant mineral resources (City of Moreno Valley 2006b). There are sand and gravel resources located near Moreno Valley and within Riverside County; however, there are no operating quarries for these resources (City of Moreno Valley 2006a and 2006b). Additionally, the sand and gravel resources found in the nearby areas are not considered to be important local resources (City of Moreno Valley 2006a and 2006b).

a, b) No Impact

The CDOC, Division of Mines and Geology has not identified significant mineral resources within Moreno Valley (Moreno Valley 2006b). The CGS classifies the Project area as sand and gravel resource areas based on SMARA Special Report 143: Part VII (CDOC 2019). The common mineral materials found in the area are sand, gravel, and rock, which are not considered valuable mineral resources locally, to the region, or to residents of the State (Moreno Valley 2006a and 2006b). The Project area is not currently used as a mineral resource recovery site and the proposed Project would not involve mining or the production of mineral resources. No impact on the availability of a known mineral resource or the availability of a locally-important mineral resource recovery site would occur as a result of construction or operation of the proposed Project.

Mitigation Measures: None required or recommended.

3.13 Noise

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	[ ]	[X]	[ ]	[ ]
b) Generation of excessive groundborne vibration or groundborne noise levels?	[ ]	[ ]	[X]	[ ]
c) For a Project located within the vicinity of a private airstrip or an airport land use plan or, where	[ ]	[ ]	[ ]	[X]

such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

Discussion

Noise is generally defined as unwanted sound. Noise can cause hearing impairment for humans, and may also disrupt everyday activities such as sleep, speech, and activities requiring concentration. Noise can also interfere with the activities of wildlife, especially nesting birds. Noise-sensitive land uses are generally those where excess noise would disrupt how humans and/or wildlife use the land. Land uses such as schools, churches, and hospitals would typically be considered noise-sensitive. Noise may be generated by mobile (i.e., line) sources (for example, cars, trains, and aircraft) or stationary (i.e., point) sources (for example, machinery, airports, and construction sites).

Noise is described using specific terminology, as summarized below. The following explanations are adapted from the U.S. Department of Transportation Federal Highway Administration (FHWA) *Construction Noise Handbook* (FHWA 2006a) and the U.S. Department of Transportation Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018):

- **A-Weighting.** A method used to account for changes in level sensitivity as a function of frequency. A-weighting de-emphasizes the high (6.3 kilohertz [kHz] and above) and low (below 1 kHz) frequencies and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of the human ear.
- **Community Noise Equivalent Level (CNEL).** A 24-hour time-averaged sound exposure level adjusted for average-day sound source operations. The adjustment includes a 5-dB penalty for noise occurring between 7:00 p.m. and 10:00 p.m., and a 10-decibel (dB) penalty for those occurring between 10:00 p.m. and 7:00 a.m., to adjust for the increased impact of nighttime noise on human activities.
- **Day-Night Average Sound Level (DNL, denoted by the symbol, L_{dn}).** L_{dn} describes a receiver's cumulative noise exposure from all events over 24 hours. Events between 10:00 p.m. and 7:00 a.m. are increased by 10 dB to account for humans' greater nighttime sensitivity to noise.
- **Decibel (dB).** A unit of measure of sound level. dB are calculated by comparing sound pressure to a sound pressure reference (the threshold of human hearing) and are measured using a logarithmic scale. A-weighted decibels are expressed as dBA or dB(A).
- **Equivalent Sound Level (L_{eq}).** The equivalent sound level describes a receiver's cumulative noise exposure from all events over a specified period of time.

- **Ground Effect.** The change in sound level, either positive or negative, due to intervening ground between source and receiver. Ground effect is influenced by multiple factors, including ground characteristics, source-to-receiver geometry, and the spectral characteristics of the source. A commonly used rule-of-thumb for propagation over soft ground (e.g., grass) is that ground effects will account for about 1.5 dB per doubling of distance. However, this relationship is quite empirical and tends to break down for distances greater than about 100 to 200 ft.
- **Line Source.** A source of noise that is created by multiple point sources moving in one direction; for example, a continuous stream of roadway traffic, which radiates sound cylindrically. Sound levels measured from a line source decrease at a rate of 3 dB per doubling of distance.
- **Noise Barrier.** The structure, or structure together with other material, that potentially alters the noise at a site.
- **Point Source.** A source that radiates sound spherically. Sound levels measured from a point source decrease at a rate of 6 dB per doubling of distance.
- **Ten-Percentile Exceeded Sound Level (L_{10}).** The sound level exceeded 10 percent of a specific time period. For example, from a 50-sample measurement period, the fifth (10 percent of 50 samples) highest sound level is the 10-percentile exceeded sound level. Other similar descriptors include L_{50} (the sound level exceeded 50 percent of a specific time period), L_{90} (the sound level exceeded 90 percent of a specific time period), etc.

Groundborne vibration may occur when heavy equipment or vehicles create vibrations in the ground, which can then propagate through the ground to buildings, creating a low-frequency sound. Groundborne vibrations can be a source of annoyance to humans due to a “rumbling” effect, and such vibrations may also cause damage to buildings. Groundborne vibration is discussed in terms of these impacts on humans and structures. The annoyance potential of groundborne noise is typically characterized with the A-weighted sound level. Due to its low frequency, groundborne noise sounds louder than airborne noise at the same noise level; therefore, the impact thresholds for groundborne noise are typically lower than those for airborne noise. The following vibration terminology have been adapted from the FTA’s *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018):

- **Vibration Decibels (VdB)**. The vibration velocity level in decibel scale.
- **Peak Particle Velocity (PPV)**. The peak signal value (maximum positive or negative peak) of the vibration signal. PPV is often used in monitoring of construction vibration (such as blasting) because it is related to the stresses that are experienced by buildings and is not used to evaluate human response. PPV is usually expressed in inches/second in the United States.
- **Root Mean Square (rms)**. The rms is used to describe the smoothed vibration amplitude. The rms amplitude is used to convey the magnitude of the vibration signal felt by the human body, in inches/second. The average is typically calculated over a

one-second period. The rms amplitude is always less than the PPV and is always positive.

Transportation is the major source of noise in the City of Moreno Valley. Sources include roadways (especially along SR-60 and arterial roadways due to high traffic volumes) and the joint-use airport at the MARB (City of Moreno Valley 2006a). Sensitive receptors in the Project vicinity include residences, schools, and churches. Sensitive receptors neighbor pipeline alignments, well sites, and treatment facility sites.

Noise Standards

The proposed Project would be located entirely within the City of Moreno Valley. The noise standards for this jurisdiction is summarized herein. For construction noise, the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030, restricts construction within the City to between 7:00 a.m. and 7:00 p.m. on weekdays, and from 8:00 a.m. to 4:00 p.m. on Saturdays. The City Municipal Code also prohibits sound within the City that exceeds levels determined by the Centers for Disease Control and Prevention and the National Institute for Occupational Safety and Health to cause permanent hearing loss. For a sound that lasts 8 hours per day, that limit is 90 dBA.

For long-term operational noise, the City of Moreno Valley prohibits non-impulsive, maximum noise levels which exceeds the following limits measured at a distance of 200 feet or more from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property (**Table 3-14**) (City of Moreno Valley n.da.).

Table 3-14: City of Moreno Valley Noise Guidelines

Residential (in dBA)		Commercial (in dBA)	
Daytime	Nighttime	Daytime	Nighttime
60	55	65	60

City of Moreno Valley General Plan (City of Moreno Valley 2006a) has several policies and objectives related to minimizing noise impacts in the land use planning process.

- Policy 2.2.17: Discourage nonresidential uses on local residential streets that generate traffic, noise or other characteristics that would adversely affect nearby residents.
- Policy 2.10.11: Screen and buffer nonresidential projects from adjacent residential property and other sensitive land uses when necessary to mitigate noise, glare and other adverse effects on adjacent uses.
- Objective 6.3: Provide noise compatible land use relationships by establishing noise standards utilized for design and siting purposes.
- Policy 6.3.1: The following uses shall require mitigation to reduce noise exposure where current or future exterior noise levels exceed 20 CNEL above the desired interior noise level: single- and multiple family residential buildings shall achieve an interior noise level of 45 CNEL or less….New libraries, hospitals and extended

medical care facilities, places of worship and office uses shall…achieve interior noise levels of 50 CNEL or less; New schools shall…achieve interior noise levels of 45 CNEL or less.

- Policy 6.3.2: Discourage the siting of residential land uses where current or projected exterior noise due to aircraft over flights will exceed 65 dBA CNEL.
- Policy 6.3.6: Building shall be limited in areas of sensitive receptors.
- Objective 6.4: Review noise issues during the planning process and require noise attenuation measures to minimize acoustic impacts to existing and future surrounding land uses.
- Objective 6.5: Minimize noise impacts from significant noise generators such as, but not limited to, motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities.
- Policy 6.5.1: New commercial and industrial activities (including the placement of mechanical equipment) shall be evaluated and designed to mitigate noise impacts on adjacent uses.
- Policy 6.5.2: Construction activities shall be operated in a manner that limits noise impacts on surrounding uses.

The City of Moreno Valley is located within Riverside County. The County of Riverside General Plan Noise Element specifies the sound levels for land use compatibility as summarized in **Table 3-15** (Riverside County 2015). These standards are intended to be used for the siting of new land uses.

Table 3-15: Riverside County Sound Levels for Land Use Compatibility

Land Use Type	Normally Acceptable (L_{dn} or CNEL dBA)	Conditionally Acceptable (L_{dn} or CNEL dBA)
Single-family housing; Duplex multi-family housing; Mobile homes	50-60	55-70
Multi-family housing	50-65	60-70
Schools, libraries, churches, hospitals, nursing homes	50-70	60-70
Playgrounds, Neighborhood parks	50-70	not defined
Office buildings; Business; Commercial; and Professional	50-70	67-77

Note: "Conditionally Acceptable" means new development should be allowed only after detailed analysis and incorporation of noise reduction requirements; outdoor environmental will seem noisy.

The State of California Department of Health Services also establishes community noise exposure compatibility levels, which are comparable to the County of Riverside land use compatibility noise standards (OPR 2017).

EMWD, as a public agency, is not subject to other jurisdictional agencies' established noise standards. Likewise, as a public agency, EMWD is not subject to the City or County ordinances and would not be required to obtain variances. EMWD has not established an applicable noise standard of its own for permanent or temporary ambient noise levels. The noise standards of the City of Moreno Valley are provided for reference. However, for the purposes of this analysis, noise associated with construction and operation of the proposed Project is not compared quantitatively to the local standards because EMWD, as a public agency, is not subject to them.

Existing Conditions

The Project is located in a suburban area with residential, commercial, office, and open space land uses. Noise-sensitive receptors adjacent to or in the vicinity of well, treatment facility sites and pipeline alignments include residences, schools, and churches. The surrounding receptors and existing attenuation features at each potential Project site are summarized below:

- North sub-area wells sites
  - Cactus Corridor Well 1, Option 1: To the north, a surface parking lot and delivery driveway abut the well site. Across the parking lot are single-family homes, which are behind a 6-foot masonry wall. To the east and south are commercial buildings. West of the site is more surface parking and the side of a commercial building.
  - Cactus Corridor Well 1, Option 2: Single-family homes are located north of the site. The line of sight from the houses to the site is blocked by a 6-foot masonry wall. Along the east border of the site is a chain-link fence, with surface parking and commercial buildings beyond the fence. To the south and west of the site are commercial land uses with no attenuating features. A former preschool is located to the west/southwest of the site and appeared to be abandoned during a site visit in December 2019. One commercial building to the southeast of the site houses the Oasis Community Church; there are no noise attenuation features between the church and the well site. Oasis Community Church holds Sunday service as well as other events for its congregation throughout the week (Oasis Community Church n.d.)
  - Cactus Corridor Well 2, Option 1: This site has uneven ground that may provide sound attenuation. To the north, the site is bordered by a surface parking lot, with commercial buildings beyond. Along the southeast edge, the site is bordered by a masonry wall approximately 4 feet tall, with a storm channel on the opposite side of the wall. Across the storm channel are single-family residences. These residences have masonry or wood walls, approximately 6 feet tall, which provide an additional barrier. West of the site, across Heacock Street, are commercial buildings, multi-family residential buildings, and a privately-owned playground and

off leash dog run for the multi-family residential community. A masonry wall (approximately 4 feet tall) near the residential buildings and playground partially blocks the line of sight between the site and buildings.

  - Cactus Corridor Well 3, Option 1: To the north, the site is immediately bordered by commercial buildings (a self-storage facility). To the east are single-family residences with a 6-foot wood fence adjoining the site. To the south are commercial areas, including a gas station. To the west are commercial areas and associated surface parking on the opposite side of Indian Street.
  - Cactus Corridor Well 3, Option 3: The site is bordered to the north by Bay Avenue. Across Bay Avenue are single-family residences which generally have no existing noise attenuation features, with the exception of the two residences located at the northern corners of Bay Avenue and Indian Street each have a 6-foot masonry wall along Bay Avenue and Indian Street. Indian Street borders the site to the east. Across Indian Street is a multi-family residential building; parts of the building are blocked by a masonry wall approximately 4 feet tall. Commercial land uses border the southern edge of the site. To the west are masonry walls between the park playground area and residences.
  - Cactus Corridor Well 4, Option 1: The north edge of the site abuts single-family homes, with wood or chain-link fences between the site and houses. Residences are located to the east of the site, with wood fences providing separation from the site. The eastern edge of the site is open to Sweetgrass Drive, but the line of sight between houses and the site is blocked by the existing wooden fences. The south side of the site is bordered by a chain-link fence with a military training-focused public charter high school on the opposite side. The west edge of the site is bounded by a chain-link fence and Perris Avenue. Across Perris Avenue are single-family homes surrounded by a 6-foot masonry wall.
  - Cactus Corridor Well 4, Option 2: Alessandro Boulevard borders the site to the north. Across Alessandro Boulevard is a school, with the main school building set approximately 300 feet back from Alessandro Boulevard. East of the site is a mobile home park which is generally separated by a wood fence, although the northernmost part of the border has a chain link fence. South of the site, separated by a chain link fence, is Hendrick Ranch Elementary School. Kitching Street borders the site to the west. A storm channel parallels the west side of Kitching Street. Beyond the channel are multi-family residential buildings. These are generally shielded from view of the site by detached garage buildings that are oriented parallel to Kitching Street. The Moreno Valley Public Library is located on the north west corner of Alessandro Boulevard and Kitching Street. A 6-foot masonry wall separates the library from the storm channel and Kitching Street.

- East sub-area well sites
  - Santiago Well Site: The site is located at the City of Moreno Valley Corporate Yard, which extends north and west of the site. To the east, the site abuts single-family homes, which are separated by a 6-foot masonry wall. The site is bounded by a

chain-link fence to the south, with Santiago Drive beyond. Across Santiago Drive to the south, houses are shielded by an existing masonry wall (roughly 4 feet tall).

  - Cactus Corridor East Well 2, Option 1: Along the northeast and southeast sides of the site (the existing Victoriano Park), single-family homes are shielded by a 6-foot masonry wall. Los Cabos Drive forms the southwest border of the site. Residences across Los Cabos Drive from the site have no noise-attenuating features. Victoriano Elementary School is located northwest of, adjacent to the site. A chain-link fence separates the site from Victoriano Elementary School.
  - Cactus Corridor East Well 2, Option 2: The site, at the existing Parque Amistad, is immediately bordered on all sides by surface streets. Landscaping trees are present along the edges of the park. To the north, east, and west of the site are single-family residences with no additional noise attenuation features. To the southeast of the site (along Camino Flores) is a storm channel. Houses on the opposite side of the storm channel are shielded by vertical steel, chain link or wood fences.

- Treatment facility sites
  - Option #1 Treatment Facility Site, Perris Boulevard between Cottonwood Avenue and Bay Avenue: This site is at the same location as Cactus Corridor Well 4, Option 1.
  - Option #2 Treatment Facility Site, Alessandro Boulevard at Kitching Street: This is at the same location as Cactus Corridor Well 4, Option 2.
  - Option #3 Treatment facility Site, Santiago Drive: This is the same location as Cactus Corridor East Santiago Well Site.
- Pipeline alignment
  - The pipeline alignment would pass by residential areas, schools, commercial areas, and open spaces (i.e., existing parks). The pipeline alignment would be located in the existing roadway right-of-way, typically at least 25 feet from the nearest receptor.

Ambient noise measurements were conducted in January 2020 at two locations that were deemed representative of the overall Project due to proximity to multiple types of noise-sensitive receptors (**Appendix E**). A 24-hour measurement was conducted at the Treatment Facility Option #1/Cactus Corridor Well 4 Option #1 site and at the Cactus Corridor East Well 2 Option #1 site. The observed CNEL and L_{dn} at the Treatment Facility Option #1/Cactus Corridor Well 4 Option #1 Site were 77 dBA and 76.7 dBA, respectively, and the 24-hour average L_{eq} was 71.5 dBA. The observed CNEL and L_{dn} at the Cactus Corridor East Well 2 Option #1 Site were 53.2 dBA and 53.1 dBA, respectively and the 24-hour average L_{eq} was 47.0 dBA.

a) Less than Significant with Mitigation Incorporated

Construction

Construction of the proposed Project is expected to last 22 months and would involve noise-generating activities such as excavation, well drilling, and installation of facilities. The construction equipment that would be used for any particular Project component can be found in *Section 2.6 Proposed Project Description*. The typical noise level of each piece of construction equipment that would be used for the Project is shown in **Table 3-16**.

Table 3-16: Typical Construction Equipment Noise Levels

Equipment	Typical Noise Levels (dBA, at 50 feet)
Auger Drill Rig	85
Backhoe/Loader	78
Compressor	78
Concrete Pumper	81
Concrete Saw	90
Crane	81
Drilling Rig	90[1]
Generator	81
Hydraulic Excavator	81
Pavement Breaker	89[1]
Paver	77
Pick-up Trucks	75
Pump	81
Sweeper	82
Utility Truck	74[1]
Water Truck	84[1]
Welder	74

Source: FHWA 2006a

1. Pavement breaker noise level was assumed to be comparable to a jackhammer. Drill rig noise level provided by contractor. Water truck noise was assumed to be comparable to a tractor. Utility truck noise was assumed to be comparable to a flat-bed truck.

Construction of the proposed pipelines would occur in the roadway right-of-way during daytime hours. Potential pipeline alignments are shown in **Figure 2-2**. Potential pipeline alignments may travel along Alessandro Boulevard, Bay Avenue, Cottonwood Avenue, Heacock Street, Indian Street, Perris Boulevard, Kitching Street, Gentian Avenue, Santiago Drive, and/or Los Cabos Drive. Pipelines would be constructed using an open cut method except at crossings of facilities, utilities, and storm channels where trenchless jack-and-bore methods would be used. Pipeline construction would include noise-generating activities such as saw cutting of the pavement, trench excavation, trench backfill and compaction, boring (where required) and site restoration/pavement replacement. Pipeline construction is expected to occur at a rate of 150 feet per day, and construction would move along the pipeline alignment as it is completed. Therefore, noise levels would affect any one receptor for a short duration. In the limited locations where

jack-and-bore methods may be used, construction would occur in one location for a longer period of time and could expose people to increased noise levels.

During Project construction, truck trips would generate noise along haul routes. Project construction would require approximately 105 round-trip worker trips per day and an average of approximately 20 round-trip hauling trips per day. Noise-sensitive land uses along haul routes, including residences and schools, would be exposed to truck noise during construction. The amount of noise generated is affected by the vehicle speed, load, road condition, and other factors. As noted in the City of Moreno Valley General Plan, road noise is a major noise source in the City. Construction truck noise that occurs in noisy locations is generally less disruptive than the same noise would be in a quieter location.

Construction of the treatment facility is expected to last 18 months. Construction would occur during daytime hours and include activities such as site preparation, grading, facilities construction and equipping, and paving. Noise-generating equipment used during treatment facility construction would include a backhoe, welder, compressor, generator, pump, and various truck types. Both potential treatment facility sites are located on vacant parcels adjacent to residences and schools. Daytime construction noise would be generated at the treatment facility site and would expose these nearby sensitive receptors to increased noise levels.

Extraction wells would be constructed in two phases: well drill and well equipping. Well drilling would last nine months per well, including a period of two weeks of continuous drilling to avoid borehole collapse. Well drilling would include additional nighttime construction activities for well development and testing occurring over an additional 12 weeks. Well equipping would last 12 months per well and be conducted during daytime hours. Well sites are located near residences, schools, and churches that would be exposed to elevated noise levels during well construction. In particular, 24-hour construction work has the potential to disturb residents adjacent to the well sites.

Because EMWD is exempt from other jurisdictional agencies' noise ordinances, sound emanating from the proposed Project construction would not be subject to the City of Moreno Valley ordinances. With the exception of well drilling work noted previously, construction activities would occur during daytime hours in accordance with City noise standards. Furthermore, existing ambient noise levels in the City of Moreno Valley are elevated due to existing traffic noise, (e.g., the observed 24-hour average L_{eq} at Treatment Facility Option #1/Cactus Corridor Well 4 Option #1 was 71.5 dBA [**Appendix E**]) which would dampen the perceived noise from the Project's construction activities. Due to the proximity of construction activities to residences and other noise-sensitive land uses, impacts from construction noise would be potentially disruptive to daily activities. With the implementation of **Mitigation Measure NOI-1**, which requires the construction contractor to implement BMPs for noise control, daytime construction noise impacts would be reduced to less than significant.

Extended nighttime construction work associated with well drilling has the potential to create a significant noise impact on nearby residences. Residential land use would be sensitive to construction noise during nighttime hours because it could be disruptive to sleep. Noise attenuates with distance, and at each parcel selected for a well site, the well would be located within the site such that it is as far as practicable from residential property lines.

Existing features in the area can also attenuate noise to residential receptors. The approximate range of noise attenuation from existing features was estimated based on the Federal Highway Administration Roadway Construction Noise Model User Manual, which provides the guidance on shielding as summarized in **Table 3-17** (FHWA 2006b).

Table 3-17: Noise Shielding Guidance References

dBA of Shielding	Equivalent to the following between noise source and receptor
0	No barriers or breaks in the line of sight between the noise source and the receptor.
3	A noise barrier or other obstruction (like a dirt mound) just barely breaks the line-of-sight between the noise source and the receptor.
5	Noise source is enclosed or shielded with a solid barrier close to the source, but the barrier has some gaps in it.
8	Noise source is enclosed or shielded with a solid barrier close to the source
10	Noise source is completely enclosed and shielded with a solid barrier close to the source.
15	A building stands between the noise source and receptor and completely shields the noise source.

Source: FHWA 2006b

Table 3-18 summarizes existing attenuation features at each site.

Table 3-18: Existing Attenuation Features at Proposed Well and Treatment Site Options

Site	Existing Attenuation Features	Approximate Attenuation Factors (dBA)
Cactus Corridor Well 1, Option 1	6-foot masonry walls	5
Cactus Corridor Well 1, Option 2	6-foot masonry walls	5
Cactus Corridor Well 2, Option 1	Two brick or masonry walls, approximately 4 feet tall, and uneven grassy surface.	5
Cactus Corridor Well 3, Option 1	4-6 foot wood fencing	3
Cactus Corridor Well 3, Option 3	4-6 foot tall masonry walls along corner residence and ground-level apartments. No walls on other lots.	0-3
Cactus Corridor Well 4, Option 1	Wood fences, 6-foot masonry walls or chain link fencing	0-3
Cactus Corridor Well 4, Option 2	Wood fences, chain link fencing, partial 6-foot masonry wall	0-3
Santiago Well Site	6-foot masonry walls	5

Site	Existing Attenuation Features	Approximate Attenuation Factors (dBA)
Cactus Corridor East Well 2, Option 1	6-foot masonry wall	0-5
Cactus Corridor East Well 2, Option 2	Surface streets, trees, storm channel	0-3

The noise from the well drill rig would originate at least 50 feet from residential property lines to accommodate the approximate 150-feet by 150-feet permanent well footprint, and some parcels have existing attenuation features (e.g., masonry walls). However, the well drilling activities (consisting of a drill rig, pickup truck, and backhoe) operating simultaneously would be expected to generate noise levels up to 90.2 dBA L_{eq} at a distance of 50 feet (with no shielding present). Exposing residents to this level of noise over an extended timeframe would constitute a significant impact. In order to mitigate this impact, EMWD shall require that its contractor implement **Mitigation Measure NOI-2**, which requires that sound barriers providing at least 25 dBA of noise attenuation be used during well drilling and nighttime construction activities. With the use of all feasible sound barriers, the noise from well drilling activities would be reduced to 65.2 dBA L_{eq} at a distance of 50 feet (as calculated using the Federal Highway Administration's Roadway Construction Noise Model), which is close to what the City and County consider acceptable noise levels for residential land uses. At a distance of 200 feet from the source, such a sound barrier would reduce construction noise levels to 53.1 dBA L_{eq}, which is within the range of what the City and County consider acceptable nighttime noise levels for residential land uses. With the implementation of **Mitigation Measure NOI-2**, construction noise impacts resulting from the nighttime well drilling activities would be reduced to a less than significant level.

Operation

Once operational, the below-ground conveyance pipelines would not generate noise. Operation of the treatment facility involves use of pumps and an air compressor which typically generate 81 and 78 dBA of noise, respectively at a distance of 50 feet (see **Table 3-16**). To provide noise attenuation, all large equipment (including the well and potable water booster pumps) would be housed within a CMU building, which would provide approximately 10 dBA of attenuation (see **Table 3-17**). In addition, the treatment facility site would be surrounded by a 6-foot tall CMU perimeter wall, which would provide another 5 dBA of shielding. With the shielding from the CMU building and six-foot CMU perimeter wall, noise from the treatment facilities would be less than significant. Well operation would require 24-hour pumping, which would generate noise. To minimize noise from the pumps, they would be enclosed within a CMU well house. In addition, a six-foot tall CMU wall would surround each well house, and wells would be sited at least 50 feet from the nearest adjacent land use. With shielding from the CMU well house and six-foot CMU wall, as well as attenuation due to distance, noise from operation of the well facilities would be less than significant. Operation and maintenance of the pipelines would be incorporated into EMWD's existing operation and maintenance activities; no new significant vehicle use or associated noise would result from the proposed Project.

Ongoing O&M activities at the treatment facility would involve bi-weekly visits by an EMWD operator, monthly routine maintenance, monthly chemical delivery, and annual inspection of the GAC Media. Ongoing O&M for the wells would involve monthly inspections. Long-term noise associated with these minor additional vehicle trips would not result in a noticeable increase in permanent ambient noise above existing levels. With the environmental commitments and project design features, operational noise from the proposed facilities would be less than significant.

b) Less than significant impact

Construction activities associated with the proposed Project would have the potential to generate low levels of groundborne vibration. Groundborne vibrations propagate through the ground and decrease in intensity quickly as they move away from the source. Vibrations with a PPV of 0.2 inches/second or greater have the potential to cause damage to non-engineered timber and masonry buildings (FTA 2018). The *Transit Noise and Vibration Impact Assessment Manual* provides average source levels for typical construction equipment that may generate groundborne vibrations; vibration source levels for construction equipment associated with the proposed Project are summarized in **Table 3-19**. None of the construction equipment to be used would exceed the PPV threshold at a distance of 25 feet, which is the closest that the Project construction would be to adjacent, existing land uses.

Table 3-19: Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet (inches/second)	Approximate VdB at 25 feet
Backhoe/Loader	N/A	N/A
Auger Drill Rig	0.089[1]	87[1]
Compressor	N/A	N/A
Concrete Pumper	N/A	N/A
Concrete Saw	N/A	N/A
Crane	N/A	N/A
Drilling Rig	0.089[1]	87[1]
Generator	N/A	N/A
Hydraulic Excavator	N/A	N/A
Pavement Breaker	0.035	79
Paver	N/A	N/A
Pick-up Trucks	0.076[1]	86[1]
Pump	N/A	N/A
Sweeper	N/A	N/A
Utility Truck	0.076[1]	86[1]
Water Truck	0.076[1]	86[1]
Welder	N/A	N/A

Source: FTA 2018
Most construction equipment is not expected to generate vibration; these are denoted with "N/A."
1. Drill rig PPV was assumed to be comparable to caisson drilling. Pavement breaker was assumed to be comparable to a jackhammer. Pickup trucks, utility trucks, and water trucks were assumed to be comparable to "loaded trucks" as listed in the *Transit Noise and Vibration Impact Assessment Manual.*

According to the FTA's *Transit Noise and Vibration Impact Assessment Manual*, 80 VdB is the threshold for human annoyance from groundborne vibration noise when events are infrequent. Typical vibration dB levels for construction equipment are summarized in **Table 3-19**. The proposed Project would not involve use of high-impact activities, such as piledriving or blasting, that typically generate high levels of groundborne vibration. However, loaded trucks and well drilling rigs would produce levels of vibration noise that exceed the threshold for human annoyance at a distance of 25 feet. Groundborne vibration noise from the most impactful piece of equipment (drilling rig) would attenuate to below 80 VdB at a distance of 43 feet ($VdB_{distance} = VdB_{reference} - 30\log(distance/25)$) (FTA 2018). Vibration noise from trucks would attenuate to below 80 VdB at a distance of 40 feet. Sensitive receptors are located at least 50-feet from the noise source, so the impact would be less than significant.

Pipeline construction would occur near sensitive receptors including residences and schools. Pipeline construction would occur only between the hours of 7:00 a.m. and 7:00 p.m. on weekdays, and from 8:00 a.m. to 4:00 p.m. on Saturdays in accordance with City Code. The pipeline would be constructed at least 25 feet from the nearest sensitive receptors. Loaded trucks which may generate groundborne vibration noise may be used during pipeline construction. These trucks could generate vibration noise above 80 VdB at receptors within 40 feet of the construction sites. Vibrations associated with pipeline construction would occur infrequently and would be short in duration. Additionally, pipeline construction would move along the alignment at a rate of 150 linear feet per day and would not remain in the same location for an extended period of time; therefore, sensitive receptors near the pipeline alignment would not experience vibrations for the entire duration of Project construction. Exposure would be temporary, sporadic, and limited in duration. Once operational, the pipeline would not produce groundborne vibration or groundborne noise.

Multiple well sites would be located near sensitive receptors, including schools, churches and residential areas. Vibrations may be generated by loaded trucks traveling to or from the well sites or moving about at a site. However, each well would be located at least 50 feet (i.e. more than 43 feet, the distance at which groundborne noise would dissipate to less than 80 VdB) from the nearest sensitive receptors, therefore ongoing vibration noise generated by the drill rig would not meet the threshold for human annoyance at sensitive receptors. Once operational, the wells would not produce groundborne vibration or noise.

Construction of the treatment facility would require the use of loaded trucks that could generate intermittent groundborne vibration noise. Treatment facility construction would be limited to daytime hours. Both potential treatment facility sites are at least 40 feet, the distance at which groundborne noise would dissipate to less than 80 VdB, from the nearest sensitive receptors; therefore, vibration noise generated during construction activities would not meet the threshold for human annoyance. Once operational, the treatment facility would not produce groundborne vibration noise.

Construction of the proposed Project may generate low levels of vibration noise; however, the potential impacts on surrounding land uses would be infrequent, temporary and short in duration. Vibration and vibration noise would not be damaging or excessive, therefore the impact would be less than significant.

c) No impact

There is one airport in the Project vicinity, the MARB/March Inland Port. The base is located southwest of the City of Moreno Valley, roughly one-half mile from the Project site; the runways at the base are approximately 1.75 miles from the Project site. The Project site would be outside the 60-CNEL noise contour for the airport (City of Moreno Valley 2006b). Therefore, the Project would not expose residences or workers to excessive aircraft noise and there would be no impact.

Mitigation Measures:

To mitigate possible noise impacts of the Project, EMWD shall implement **Mitigation Measure NOI-1** and **Mitigation Measure NOI-2**. With these mitigation measures incorporated, the Project impacts are considered less than significant.

Mitigation Measure NOI-1: Construction Noise Reduction Measures

EMWD shall require its contractor to implement the following actions relative to construction noise:

- EMWD shall conduct construction activities to between 7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 4:00 p.m. on Saturdays, in accordance with the City of Moreno Valley Municipal Code, Sections 8.14.040 and 11.80.030, with the exception of specific well drilling and testing activities, which require 24-hour continuous work.
- Prior to construction, EMWD in coordination with the construction contractor, shall provide written notification, to all properties within 100 feet, as determined by the maximum 90 dBA noise contour, of the proposed Project facilities informing occupants of the type and duration of construction activities. Notification materials shall identify a method to contact EMWD's program manager with noise concerns. Prior to construction commencement, the EMWD program manager shall establish a noise complaint process to allow for resolution of noise problems. This process shall be clearly described in the notifications.
- Stationary noise-generating equipment shall be located as far from sensitive receptors as possible. Such equipment shall also be oriented to minimize noise that would be directed toward sensitive receptors. Whenever possible, other non-noise generating equipment (e.g., water tanks, roll-off dumpsters) shall be positioned between the noise source and sensitive receptors.
- Equipment and staging areas shall be located as far from sensitive receptors as possible. At the staging location, equipment and materials shall be kept as far from adjacent sensitive receptors as possible.

- Construction vehicles and equipment shall be maintained in the best possible working order; operated by an experienced, trained operator; and shall utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds).
- Unnecessary idling of internal combustion engines shall be prohibited. In practice, this would require turning off equipment if it would idle for five or more minutes.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion powered equipment, where feasible.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

Mitigation Measure NOI-2: Noise Barriers

EMWD shall require its contractor to install temporary construction noise barriers prior to the start of well construction activities that would occur outside the hours specified by the City of Moreno Valley Municipal Code Sections 8.14.040 and 11.80.030. These barriers shall block the line of sight between the equipment and the noise-sensitive receptor(s) and shall provide a minimum of 25 dBA of noise attenuation. Due to the height of the drill rig, the noise barrier shall be at least 24 feet tall. The construction noise barrier shall be constructed of a material with a minimum weight of one pound per square foot with no gaps or perforations. It shall remain in place until conclusion of the nighttime construction activities. The Project plans and specifications shall include documentation from a noise consultant verifying the inclusion of an appropriate noise barrier.

3.14 Population and Housing

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	[ ]	[ ]	[ ]	[X]
b) Displace substantial numbers of existing people or housing,	[ ]	[ ]	[ ]	[X]

necessitating the construction of replacement housing elsewhere?

Discussion

In 2015, EMWD served an estimated retail population of 546,146 through approximately 136,200 single family accounts, 4,300 multi-family accounts, and other commercial, industrial, institutional, landscape, and irrigation accounts. EMWD's service area is currently 40 percent built out, making it one of the few regions in Southern California that will see significant population growth in the coming decades. As planned for in the EMWD 2015 Urban Water Management Plan (UWMP), EMWD's retail service area population will increase to approximately 939,100 in 2040 with an estimated 230,500 single family accounts and 7,300 multi-family accounts (EMWD 2016).

a) No Impact

The proposed Project would not directly induce unplanned population growth because no new housing or permanent employment are proposed. The proposed Project involves expansion of EMWD's water service infrastructure within its existing service area to augment water supply reliability and offset imported water. This supply would accommodate existing water demand and is consistent with planned growth anticipated in the 2015 UWMP. Therefore, the proposed project would not directly or indirectly induce unplanned population growth and no impact would occur.

b) No Impact

Construction and operation of all proposed Project features would occur within existing roadways or on vacant lots or parks. The Project would not displace existing people or houses or require the construction of replacement housing. At the parks, the approximate 150 feet by 150 feet well sites would be accommodated in the existing, open grassy spaces and would not displace people or housing. For these reasons, no impact would occur.

Mitigation Measures: None required or recommended.

3.15 Public Services

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically	[ ]	[X]	[ ]	[ ]

altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	[ ]	[ ]	[ ]	[X]
ii) Police protection?	[ ]	[ ]	[ ]	[X]
iii) Schools?	[ ]	[ ]	[ ]	[X]
iv) Parks?	[ ]	[ ]	[X]	[ ]
v) Other public facilities?	[ ]	[ ]	[ ]	[X]

Discussion

Fire Protection

The City of Moreno Valley provides fire protection and emergency services within the proposed Project area and is part of the California Department of Forestry and Fire Protection (Cal Fire)/Riverside County Fire Department's regional, integrated cooperative fire protection organization. The Moreno Valley Fire Department has seven fire stations that service the City (City of Moreno Valley n.d.e).

Police Protection

The City of Moreno Valley contracts police services from the Riverside County Sheriff's Department to provide police protection and crime prevention services. The Moreno Valley Police Department operates out of the Public Safety Building located at 22850 Calle San Juan de Los Lagos, approximately one mile west of the Project area. The department also uses satellite offices in strategic locations throughout the City (City of Moreno Valley n.d.f).

Schools

Children who reside in the City of Moreno Valley attend schools within two different school districts: the Moreno Valley Unified School District and the Val Verde Unified School District. A satellite campus of Riverside Community College is also located within Moreno Valley, 0.65 miles from the proposed Project sites at 16130 Lasselle Street. The Moreno Valley Unified School District operates 39 preschools, elementary schools, middle schools, high schools, and alternative schools within Riverside County (Moreno Valley

Unified School District 2019). The Val Verde Unified School District operates 24 preschools, elementary schools, middle schools, high schools, and alternative schools within Riverside County (Val Verde Unified School District 2019).

Parks

The Moreno Valley Parks and Community Services Department manages and provides maintenance services for City Parks and Facilities, and provides a wide range of recreation activities, programs and services throughout the community. There are 38 parks and recreational facilities operated by the Moreno Valley Parks and Community Services District (City of Moreno Valley, n.d.c). The City of Moreno Valley Parks, Recreation and Open Space Comprehensive Master Plan (2010) defines local park and recreation facilities as Community Parks, Neighborhood Parks, Mini Neighborhood Parks, Greenways and Specialty Parks. The proposed Project has identified three City of Moreno Valley parks as optional well sites. These three parks are classified as Neighborhood and Mini Neighborhood; therefore, background information provided herein is focused on these two park classifications.

Neighborhood Parks typically range from five to 20 acres in size and are geared to serve residents living within three-quarters of a mile. Amenities typically programmed into a Neighborhood Park include informal open play areas; children's play apparatus; picnic tables and shelters; barbecues; practice sports fields; basketball, tennis and volleyball courts; public restrooms; and onsite parking. Mini Neighborhood Parks typically range from one-quarter to five acres in size and are intended to meet specialized recreational needs. Site amenities at Mini Neighborhood Parks can include both active and passive features including landscaped use in industrial or commercial areas; children's play apparatus; picnic areas and sitting areas. The City (2010) recognizes the need to ensure park facilities are evenly distributed throughout the city by identifying service radius standards. The service radius for Neighborhood Parks is three-quarter to one mile. Due to the limited amenities included in Mini Neighborhood Parks, they are not typically included in the service radius count.

The proposed Project has identified three parks as options for well sites. Cactus Corridor Well 3, Option 2 would be located in Bayside Park. The 2.04-acre site is designated as a Mini Neighborhood Park and includes a half-court basketball court, horseshoe pits, playground equipment, picnic tables and shelter, barbecues, drinking fountains, security lighting, a concrete walking trail and open landscaped green space. Most of the park's hardscape facilities, including benches, picnic tables, and playground equipment, are clustered together on the western half of the park. The walking path, a park bench, landscape grass, and landscape trees occupy the eastern half. The site abuts Food 4 Less grocery store to the south, and two residences to the west. Bay Avenue runs north along the site, with residences on the north side of Bay Avenue. Indian Street forms the east border of the site. This park is 100 percent built out (City of Moreno Valley 2010), with 28 percent (0.57 acre) dedicated to hardscape features and 72 percent (1.47 acres) dedicated to green space features.

Cactus Corridor East Well 2, Option 1 would be constructed in Victoriano Park. The five-acre site is designated as a Neighborhood Park and includes a soccer field, multi-purpose field, and open green space with landscaping trees. Hardscape features include barbecues, a paved walking trail, picnic tables and shelter, vending machine, drinking fountains, security lighting, a restroom, and parking. Victoriano Elementary School is located northwest of the park. To the north and east, single-family residences surround the park. To the southwest, Los Cabos Drive borders the site. This park is 100 percent built out (City of Moreno Valley 2010), with 10 percent (0.51 acre) dedicated to hardscape features and 90 percent (4.49 acres) dedicated to green space features.

Cactus Corridor East Well 2, Option 2 would be located in Parque Amistad. The 4.24-acre site is designated as a Neighborhood Park and includes two softball fields, and open landscaped green space. Hardscape features include two basketball half-courts, playground equipment, barbecues, picnic tables and a shelter, drinking fountains, and security lighting. The park is bordered on all sides by paved roads (Camino Flores, Calle Camelia, Calle Alto, and Caballo Road). Residential neighborhoods surround the park. This park is 100 percent built out (City of Moreno Valley 2010) with 10 percent (0.43 acre) dedicated to hardscape features and 90 percent (3.81 acres) dedicated to open, landscaped green space features.

Libraries

There are two public libraries accessible to Moreno Valley residents. The main 16,000 square foot Moreno Valley Public Library is located at 25480 Alessandro Boulevard, on the northwest corner of Alessandro Boulevard and Kitching Street. A branch location is at the Moreno Valley Mall on 22500 Town Circle (City of Moreno Valley n.d.b).

Hospitals

There are two hospitals located within Moreno Valley. The Riverside County Regional Medical Center (26520 Cactus Avenue) and the Kaiser Permanente Moreno Valley Medical Center (27300 Iris Avenue) (City of Moreno Valley 2006a).

a.i) No Impact

The proposed Project would not construct new or physically altered fire protection facilities, nor would it substantially change response times or service ratios for fire protection services and facilities. Fire protection requirements during construction of the proposed Project would be short-term and the demands would be filled by the existing local work force. Existing fire protection services provided by the Riverside County Fire Department would be sufficient to provide fire or other emergency response to the proposed Project sites. In addition, operation of the proposed Project would not directly or indirectly induce unplanned population growth that would require construction of new fire departments or expansion of fire protection facilities. No additional or increased fire protection facilities to maintain response times, service ratios, or other measures of performance would be required. As a result, no impact on fire protection services would occur.

a.ii.) No Impact

The proposed Project would not construct new or physically altered police protection facilities, nor would it substantially change response times or service ratios for police services and stations. In the event of an emergency at a proposed Project site, existing police services provided by the Riverside County Sheriff's Department would be sufficient. In addition, operation of the proposed Project would not directly or indirectly induce unplanned population growth that would require construction of a new or expansion of the existing police station to maintain response ratios, service ratios, or other measures of performance. As a result, no impact to police services would occur.

a.iii.) No Impact

The proposed Project would not change existing demand on schools because the Project would serve existing and planned communities. Construction of the proposed Project does not include housing and operation would not result in new employment or population growth that would result in an influx of students. No new school facilities would need to be built in order to maintain class size ratios or other performance objectives. As a result, no impact on schools would occur.

a.iv.) Less than Significant Impact

Three parks have been selected as options for installation of two proposed groundwater extraction wells: One at Bayside Park (Cactus Corridor Well 3 Option 2), and one at either Victoriano Park or Parque Amistad (Cactus Corridor East Well 2 Option 1 and Option 2), as shown in **Figure 2-2**. Each well site would have a footprint of 150 feet by 150 feet when completed. Installation of a well at any of these park locations would occur within open, landscaped green space portions of the parks and would not require removal of any park facilities or equipment. The wells would be secured with a CMU well housing structure and a perimeter wall around the well site. Impacts would result from temporary construction activities, which would adhere to standard EMWD BMPs (see *Section 2.7 Environmental Commitments*). In total, the Project would result in replacement of up to approximately 20,000 square feet (one-half acre) of open, landscaped public park area for each of the groundwater extraction wells.

If Cactus Corridor Well 3 is located at Option #2, Bayside Park, it would occupy one-half acre of the park's 1.47 acres, or 34 percent, of green space area, leaving 0.97 acre of open green space area available. The percentage of the park dedicated to open green space would decrease from 72 percent to 48 percent. If Cactus Corridor East Well 2 is located at Option #1, Victoriano Park, it would occupy one-half acre of the park's 4.49 acres, or 11 percent, of green space area, leaving 3.99 acres of open green space area available. The percentage of park dedicated to open green space would decrease from 90 percent to 80 percent. If Cactus Corridor East Well 2 is located at Option #2, Parque Amistad, it would occupy one-half acre of the park's 3.81 acres, or 13 percent, of green space area, leaving 3.31 acres of open green space area available. The percentage of park dedicated to open green space would decrease from 90 percent to 78 percent.

The City of Moreno Valley's General Plan policy 4.2.7 establishes the City level of service (LOS) standard as 3 acres of developed parkland for every 1,000 residents, which is the minimum parkland dedication allowed by the Quimby Act for residential subdivisions (City of Moreno Valley 2010). The City of Moreno Valley has two methods to determine its park acreage ratio. The first method only counts City-owned parkland in its calculation of total parkland acres. The second method counts City-owned parkland and school fields and facilities available for park and recreation uses. The City is heavily dependent on school fields and facilities to meet the demand for sports fields, after-school recreation programs and cultural programs; it makes up for a lack of City-owned parkland by utilizing school fields and facilities for park and recreation purposes. Therefore, it relies on the second method in evaluating its level of service. These two methods are calculated in Table 3-20.

Table 3-20: Analysis of Current Parkland Acreage Requirements

City of Moreno Valley	Method 1 (Not counting school fields)	Method 2 (Counting school fields)
Population	184,000 people	184,000 people
General Plan Recommended Park Standard	3 acres/1,000 people	3 acres/1,000 people
Park Acres Required to meet General Plan Standard	552 acres	552 acres
Actual Park Acres	393 acres	608 acres
Actual Acres/1,000 Population Ratio	2.14 acres/1,000 people	3.304 acres/1,000 people
Total parkland acreage required for development of the Project	1	1
Acre/1,000 Population Ratio after implementation of the Project	2.13	3.30

Source: City of Moreno Valley 2010

As shown in **Table 3-20**, the proposed Project would not significantly reduce the City's park service ratio. In addition, the City (2010) intends to build more parks in the future, including Lasselle Sports Park, Cottonwood Park, and Patriot Park, which would lessen the impacts of the proposed Project.

In addition to the 3 acres/1,000 residents service ratio, City (2010) also recognizes the National Recreation and Park Association recommendation that urban cities strive to reach a goal of 10 acres per 1,000 of population counting local, regional and state/federal parkland and facilities within the agencies' sphere of influence. This ratio is presented for the City of Moreno Valley in Table 3-21.

Table 3-21: Analysis of Current Local, Regional and State/Federal Open Space Requirements

City of Moreno Valley	Metric
Moreno Valley Parkland	393 acres
School District Land	215 acres
County Regional Parkland	1,155 acres
State Park Recreation Area	1,821 acres
Total Parkland Available	3,584 acres

City of Moreno Valley	Metric
Desired acre/1,000 population ratio	10 acres
Population	184,000
Actual acres/1,000 population ratio	19.48 acres
Total parkland acreage required for development of the Project	1 acre
Acres/1,000 population ratio after implementation of the Project	19.47

Source: City of Moreno Valley 2010

As shown in **Table 3-21**, the proposed Project would not significantly reduce the desired acres per 1,000 population ratio designated by the National Recreation and Park Association.

In total, the proposed Project could replace up to one acre of open green space park land within the City of Moreno Valley. However, Cactus Corridor Well 3 may be sited at Option 1, a vacant parcel near the intersection of Alessandro Boulevard and Indian Street. In the event that Cactus Corridor Well 3 is sited at Option 1, instead of at Option 2 (Bayside Park) the Project would avoid impacting one-half acre of parkland and would, overall, result in replacement of only one-half acre of open, landscaped public park area associated with Cactus Corridor East Well 2. If Cactus Corridor Well 3 is sited at Bayside Park (Option 2), the total area of landscaped park that would be replaced by the proposed Project would be approximately one acre (one-half acre for Cactus Corridor Well 3 plus one-half acre for Cactus Corridor East Well 2). Overall, this would not have a significant impact on the City's target of 3 acres per 1,000 residents of parks and open space because the City currently has a ratio of 3.304 acres of park and open space for every 1,000 residents and the Project would reduce that ratio to 3.30 acres per 1,000 people (see Table 3-21). It would also not impact the City's service radius objectives for Neighborhood Parks. As mentioned in the ***Discussion***, above, the City aims to provide a mix of both hardscape and open green space at its Neighborhood and Mini Neighborhood parks. With implementation of the proposed Project, each of the three parks would continue to offer a mix of hardscape features (playground equipment, basketball courts, picnic tables and shelters, etc.) and open landscape features (multi-purpose fields, walking paths, etc.). Furthermore, the Project does not propose new housing or employment that would result in an increase in the demand for park facilities in the area or a further reduction in the park service ratio. Finally, the City (2010) intends to build more park land in the future, including Lasselle Sports Park, Cottonwood Park, and Patriot Park, which would lessen the impacts of the proposed Project. As a result, a less than significant impact on parks would occur. This impact is also addressed under *Section 3.16 Recreation*.

a.v.) No Impact

The proposed Project would not change existing demand on other public facilities because the Project does not propose new housing units, nor would it directly or indirectly induce population or employment within the area. Construction and operation of the

Project would not necessitate expansion of existing or construction of new public facilities such as libraries or hospitals. Therefore, no impact to other public facilities would occur.

Mitigation Measures: None required or recommended.

3.16 Recreation

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	[ ]	[ ]	[X]	[ ]
Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	[ ]	[ ]	[ ]	[X]

Discussion

While implementation of the proposed Project does not include new housing or employment that would increase use of existing recreation facilities, three proposed Project site options occur within existing parks. These are Victoriano Park (Cactus Corridor East Well 2 Option 1), Parque Amistad Park (Cactus Corridor East Well 2 Option 2), and Bayside Park (Cactus Corridor Well 3 Option 2). Each of these parks is described above in *Section 3.15*.

a) Less than Significant Impact

Victoriano Park and Parque Amistad contain approximately 4.49 acres and 3.81 acres open landscaped green space area, respectively. The proposed Cactus Corridor East Well footprint would occupy approximately one-half acre of green space areas at one of the sites. The percentage of park dedicated to open landscaped green space would decrease from 90 percent to 80 percent at Victoriano Park and 78 percent at Parque Amistad. The proposed well would avoid impacting existing park hardscape features, which include picnic benches, barbecues, and playground equipment. Construction would

have a temporary impact on access to and use of the recreational facilities. However, the Project would not result in a permanent physical deterioration of the existing recreational facilities and, once construction is complete, the park would continue to offer a mix of both hardscape and open green space features deemed valuable in the City Parks, Recreation and Open Space Comprehensive Master Plan (2010).

Bayside Park is approximately two acres and most of the park's facilities including benches, picnic tables, and playground equipment, are clustered together on the western half of the park. A walking path, a park bench, and landscape trees occupy the eastern half. Installation of the well would occur within the open, landscaped portion of the park and would not involve removal of the park hardscape features on the western half of the park. The percentage of Bayside Park dedicated to open green space would decrease from 72 percent to 48 percent if Cactus Corridor Well 3 is located at this site. Construction would have a temporary impact on access to and use of the recreational facilities. However, the Project would not result in a permanent physical deterioration of the existing recreational facilities and, once construction is complete, the park would continue to offer a mix of both the hardscape and open green space features deemed valuable in the City Parks, Recreation and Open Space Comprehensive Master Plan (2010) for this park.

Construction of the wells would occur within open, landscaped areas of the parks and would not involve removal of recreational facilities or equipment. Impacts from construction and operational activities would be minimized through adherence to standard EMWD BMPs (see *Section 2.7 Environmental Commitments*). Ongoing O&M activities would be minimal (monthly site visits from EMWD operators to inspect the site) and would not interfere would regular use of the parks and park facilities. Well operation would require 24-hour pumping, which would generate noise. To minimize noise from the pumps, they would be enclosed within a CMU well house and a 6-foot tall CMU wall would surround each well house. In addition, as explained under *Section 3.15*, the Project would not reduce the City's park service ratio target below 3 acres per 1,000 residents (see Table 3-21) and it would not impact the City's service radius objectives for Neighborhood Parks. The proposed Project does not include residential housing and would not induce population growth that would permanently increase the use of the parks and recreational facilities. Therefore, the proposed Project would have a less than significant impact.

b) No Impact

Implementation of the proposed Project would not require construction or expansion of recreational facilities which could have an adverse physical impact on the environment. As a result, no impact would occur.

Mitigation Measures: None required or recommended.

3.17 Transportation

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

Discussion

The major roadways that provide regional access to the Project site are State Route 60 (SR-60), which runs east-west through the City of Moreno Valley, and Interstate 215 (I-215), which is located immediately west of the City and is the primary route for north-south travel. Local access within the Project area is provided by Cottonwood Avenue, Alessandro Boulevard, Cactus Avenue, Perris Boulevard, Kitching Street, and others. Public transportation in the Project area consists of bus service provided by the Riverside Transit Authority; bus stops exist in the Project vicinity, such as along Alessandro Boulevard. Class 2 bike lanes and Class 3 bike routes also exist in the Project area.

The City of Moreno Valley General Plan Circulation Element establishes goals, objectives, and policies for transportation in the City. The General Plan identifies acceptable LOS standards for roadways in the City. Acceptable levels of service in the Project vicinity are LOS C or D, depending on the roadway (City of Moreno Valley, 2006a).

The RCTC works to plan and implement transportation improvements throughout the County, including assisting local governments with funding. RCTC maintains a Congestion Management Program, which is periodically updated and was last updated

and adopted in 2011. RCTC has also prepared a Long Range Transportation Study (LRTS), which incorporates the Congestion Management Plan (CMP). The LRTS aims to develop strategies to address transportation challenges, provide a vision of future transportation in Riverside County, and develop a list of high-priority projects to be implemented. The LRTS evaluates highways, major roadways, transit, freight transport, and active transportation in Riverside County. The CMP portion of the LRTS indicates that all intersections and segments evaluated in the Project area are operating at LOS D or better (RCTC 2019).

The WRCOG conducts various transportation studies and develops plans to help address transportation, transit, and active transportation issues in Western Riverside County. WRCOG has prepared the Western Riverside County Active Transportation Plan, which is intended to improve transportation choices within the subregion (WROCG 2018). The Active Transportation Plan is a not a policy document; it is meant to serve as a resource for WRCOG's member agencies in pursuing funding for active transportation projects.

The SCAG Regional Transportation Plan/Sustainable Communities Strategy (SCAG 2016) identifies strategies to meet mobility of all modes, legislative, financial and air quality requirements in Southern California. It is updated every four years, most recently in June 2016. Most projects in the City of Moreno Valley focus on roadway improvements such as resurfacing and widening (SCAG 2016).

a) Less Than Significant with Mitigation Incorporated

Project construction is estimated to last 22 months. Construction of the treatment facility and pipelines would occur on weekdays between 7:00 a.m. and 8:00 p.m., in accordance with the City of Moreno Valley Municipal Code Section 11.80.030.(D)(7). Well drilling would be conducted continuously for 24 hours per day for two weeks in order to prevent borehole collapse, with additional nighttime construction activities occurring over an additional 12 weeks. Additional details on the construction schedule can be found in *Section 2.6 Proposed Project Description*. During construction, truck trips would be generated associated with construction crews and materials deliveries. Construction is estimated to generate approximately 115 round-trip trips per day, which includes trips for off-hauling of export material, delivery of materials, and construction worker commuting. All construction activities would occur within the City of Moreno Valley roadway rights of way, areas adjacent to the roadways, and on the parcels selected for well and treatment facility sites.

Construction-related traffic would be temporary. Potential traffic-related impacts associated with pipeline construction would move along the pipeline alignment over the 22-month construction period, and disturbed areas would be restored to original condition. For treatment facility and well construction, construction would occur at the sites and would not impede circulation on the adjacent roadways. Construction traffic is expected to consist of 125 round trips per day, distributed across all of the proposed Project sites, which would not produce a significant impact to the LOS of roadways in the Project area.

Therefore, Project construction would not conflict with policies outlined in the City of Moreno Valley General Plan.

Operation of the proposed Project would not conflict with regional transportation plans or the City of Moreno Valley General Plan because it would install below-ground pipelines, wells, and a treatment facility that would not have a permanent impact on circulation. EMWD would continue operating its water system, including the new wells and treatment facility, using standard vehicles. The proposed Project's long-term impacts on the circulation system would therefore be less than significant.

Although construction impacts would be temporary and have limited footprints, construction of the proposed Project may require temporary closures of roadways, bicycle lanes, and sidewalks. Potential traffic impacts related to these closures shall be mitigated through the implementation of a Traffic Control Plan as **Mitigation Measure TRA-1**, which would ensure that appropriate traffic controls are implemented and potential traffic impacts related to these closures are less than significant.

b) Less Than Significant Impact

CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts in terms of VMT for land use projects and transportation projects. VMT refers to the amount and distance of automobile travel attributable to a project. The City of Moreno Valley has not yet adopted local VMT significance criteria.

Construction of the proposed Project would involve temporary trips associated with workers, delivery of construction supplies and equipment, and hauling materials to and from the site. These trips would be temporary, occurring during the 22-month construction period, and would not cause a notable increase in VMT that would exceed a City or County threshold of significance. Operation of the proposed Project is expected to require truck trips, which consists of monthly visits to well sites and biweekly visits to the treatment facility site. These trips would be incorporated into EMWD's existing operation and maintenance program and would not significantly increase in VMT in the Project area. Therefore, the Project would be consistent with CEQA Guidelines Section 15064.3, subdivision (b) and the impact would be less than significant.

c) Less Than Significant with Mitigation Incorporated

The Project would not construct new roadways, and existing roadways would be restored to their prior condition once construction is complete. Therefore, the Project would not create roadway hazards as a result of operation.

Project construction may require some incompatible uses on roadways in the Project area (i.e., transportation of heavy construction equipment), which could temporarily increase hazards near Project sites such as the staging location at the treatment facility site. The Traffic Control Plan implemented under **Mitigation Measure TRA-1** would include measures to ensure that vehicle ingress and egress from construction sites and the

staging area occurs safely. With the implementation of **Mitigation Measure TRA-1**, the impacts from the proposed Project would be less than significant.

d) Less Than Significant with Mitigation Incorporated

Construction of the proposed Project may require lane closures along the pipeline alignment and would generate trips associated with construction (worker travel and delivery of materials and equipment). Lane closures have the potential to hinder access for emergency vehicles. Traffic control measures implemented during Project construction would require that emergency crews be able to access sites and surrounding areas. The contractor would coordinate to ensure that emergency responders are informed of construction locations. Traffic control measures would also require that the contractor make a reasonable effort to preserve access to business and properties during construction. In order to prevent Project construction from interfering with emergency responders, **Mitigation Measure TRA-1** would be implemented. With this mitigation measure incorporated, impacts would be reduced to less than significant.

Mitigation Measures:

To mitigate possible impacts to circulation and emergency access during construction, EMWD shall implement **Mitigation Measure TRA-1**. The Project impacts are considered less than significant with mitigation incorporated.

Mitigation Measure TRA-1: Traffic Control Plan

Prior to Project construction, EMWD shall require its construction contractor to implement a Traffic Control Plan, to be approved by the EMWD construction inspector and the City of Moreno Valley. The Traffic Control Plan shall:

- Identify staging locations to be used during construction
- Identify safe ingress and egress points from staging areas
- Identify potential road closures
- Establish haul routes for construction-related vehicle traffic
- Identify alternative safe routes to maintain pedestrian and bicyclist safety during construction

EMWD's project manager shall coordinate with emergency services (police, fire, and others) to notify these entities regarding construction schedule, Project alignment and siting, and potential delays due to construction. EMWD shall identify roadways and access points for emergency services and minimize disruptions to or closures of these locations.

The Traffic Control Plan shall include provisions for traffic control measures including barricades, warning signs, cones, lights, and flag persons, to allow safe circulation of vehicle, bicycle, pedestrian, and emergency response traffic. The Traffic Control Plan shall be reviewed and approved by EMWD's project manager and the construction

inspector prior to Project construction. EMWD's construction inspector shall also provide the construction schedule and Traffic Control Plan to the City of Moreno Valley for review to ensure that construction of the proposed Project does not conflict with other construction projects that may be occurring simultaneously in the Project vicinity.

3.18 Tribal Cultural Resources

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

significance of the resource to a California Native American tribe.

Discussion

A Cultural Resources Assessment Report was prepared in February 2020 for the proposed Project. On January 6, 2020 a cultural resources records search of the CHRIS was conducted at the Eastern Information Center at the University of California, Riverside. *Section 3.5 Cultural Resources* provides a summary of the CHRIS and other database searches that were conducted for the Project, which concluded that no known cultural resources are located within the Project area. A field survey was conducted on January 20 and 21, 2020. No cultural resources were discovered during the field survey. The Cultural Resources Assessment Report is provided in **Appendix C**.

On December 26, 2019 Section 106 Native American outreach was initiated. The Native American Heritage Commission (NAHC) was contacted to request a Sacred Lands File search of the Project area and a one-half-mile radius surrounding it. A list of Native American groups and/or individuals culturally affiliated with the area who may have knowledge of the cultural resources in the Project area was also requested. The results of the Sacred Lands File search by the NAHC did not indicate the presence of Native American sacred lands within the vicinity of the Project area. The NAHC provided a list of 32 Native American contacts. On January 15, 2020, letters were prepared and mailed to each of these groups. On January 28, 2020 and February 3, 2020, follow-up phone calls were conducted with the Native American contacts who had not responded to the initial letter. A total of eight responses were received from outreach efforts. A summary of each response received as of February 5, 2020 follows.

- On January 17, 2020, an email was received from Alexandra McCleary, Tribal Archaeologist for the San Manuel Band of Mission Indians (SBMI), noting the proposed Project is located outside of the Serrano ancestral territory. Ms. McCleary stated SBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.
- On January 28, 2020, a letter was received from Bobby Ray Esparza, Cultural Coordinator for the Cahuilla Band of Indians, stating the Cahuilla Band of Indians do not have knowledge of any cultural resources near or within the Project area. Although the Project is outside the Cahuilla reservation boundary, it is within the Cahuilla traditional land use area. Therefore, Mr. Esparza stated the Cahuilla Band of Indians have an interest in the Project and would like to consult in the Section 106 process. Additionally, Mr. Esparza requested a tribal monitor be present during all ground disturbing activities. Finally, the tribe asked they be notified of all updates with the Project moving forward.
- On January 28, 2020, the Project was discussed with Robert Dorame of the Gabrielino/Tongva Indians of California Tribal Council. He requested a copy of the

notification letter be emailed to him. The letter was emailed to Mr. Dorame on January 28, 2020. On February 3, 2020, Mr. Dorame stated he would review the copy of the notification letter. On February 5, 2020, Mr. Dorame stated on a phone call that in the event that cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, that he would like to be notified. Additionally, he noted that if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the MLD designation from the NAHC.

- On January 28, 2020, Chairman Steven Estrada of the Santa Rosa Band of Cahuilla Indians was called. Mercedes Estrada in the tribal administration office stated that the tribe does not have any comments regarding the Project at this time.
- On January 28, 2020, Co-Chairman Mark Cochrane of the Serrano Nation of Mission Indians was called. He stated that the Tribe does not have any comments regarding the Project at this time.
- On January 28, 2020, Chairman John Christman of the Viejas Band of Kumeyaay Indians was called and a message was left. Ray Turan returned the call and stated the Project is outside of the Tribe's area of cultural interest.
- On January 30, 2020, An email from Travis Armstrong, Tribal Historic Preservation Officer (THPO) for the Morongo Band of Mission Indians was received. Mr. Armstrong stated that the THPO acknowledges the letter sent on behalf of the Project. Mr. Armstrong stated the proposed Project is within a particularly sensitive area of the ancestral territory of the Cahuilla and Serrano people of the Morongo Band of Mission Indians. Mr. Armstrong noted the one-half-mile search radius was inadequate to evaluate resource patterning and potential for buried deposits. He requested a search radius of at least one mile. Mr. Armstrong asked that the THPO be furnished with copies of the site records for all prehistoric archaeological resources within the one-mile radius. Additionally, Mr. Armstrong requested a listing of all cultural studies or surveys previously conducted within the one-mile radius be provided.[2]
- On February 3, 2020, Chairwoman Donna Yocum of the San Fernando Band of Mission Indians was called. Chairwoman Yocum stated that the Tribe would like to defer to the local tribes regarding this Project and does not have further comments.

Appendix C provides further information on contact efforts and provides copies of all non-confidential Native American outreach correspondence.

[2] Although it is not dictated by any specific legal code, a one-half-mile radius surrounding a project's impact area is considered industry standard for the NAHC Sacred Lands File records search because it generally tends to capture the presence of Native American sacred lands within the vicinity of a project. Given the highly disturbed condition of the proposed Project area, a one-half-mile search radius was considered sufficient for the Project.

Assembly Bill (AB) 52 Consultation

AB 52 establishes a formal consultation process between the lead agency, EMWD, and all California Native American Tribes within the area regarding tribal cultural resource evaluation. AB 52 mandates that the lead agency must provide formal written notification to the designated contact of traditionally and culturally affiliated California Native American tribes that have previously requested notice. Native American tribes are notified early in the project review phase by written notification that includes a brief description of the proposed Project, location, and the lead agency's contact information. The Tribal contact then has 30 days to request project-specific consultation pursuant to this section (Public Resources Code Section 21080.1).

As a part of the consolation pursuant to PRC Section 21080.3.1(b), both parties may suggest mitigation measures (PRC Section 21082.3) that can avoid or substantially lessen potential significant impacts to tribal cultural resources or provide alternatives that would avoid significant impacts to a tribal cultural resource. The California Native American tribe may request consultation on mitigation measures, alternatives to the project, or significant effects. The consultation may also include discussion on the environmental review, the significance of tribal cultural resources, the significance of the project's impact on the tribal cultural resources, project alternatives, or the measures planned to preserve or mitigate. Consultation shall end when either: 1) both parties agree on the mitigation measures to avoid or mitigate significant effects on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

EMWD has consulted with Native American tribal representatives through written correspondence, based on a contact list of tribes who indicated to EMWD that they are interested in receiving notification. Consultation initiation letters went out to the Pechanga Band of Luiseño Indians, Soboba Band of Luiseño Indians, Morongo Band of Mission Indians, San Manuel Band of Mission Indians, Rincon Band of Luiseño Indians and the Agua Caliente Band of Cahuilla Indians on October 1, 2019. EMWD subsequently consulted with representatives from the Pechanga Band of Luiseño Indians (1/27/20), Soboba Band of Luiseño Indians (11/26/19), Rincon Band of Luiseño Indians (12/3/19), and Agua Caliente Band of Cahuilla Indians (12/13/19) to discuss the proposed Project and potential effects on cultural resources.

a) Less than Significant with Mitigation Incorporated

The results from the Cultural Resources Assessment Report (**Appendix C**) determined there are no cultural resources, Native American or historical, within the Project area. The assessment consisted of Native American and historical society consultation, historical map and imagery review, and a field survey. Most of the Project area includes areas highly disturbed by urban development, which makes the possibility of encountering intact surface tribal cultural resources low. However, the lack of surface evidence of archaeological remains does not mean there are no cultural resources to be found below

the surface. There is potential for construction ground-disturbing activities to expose previously unrecorded tribal cultural resources.

No archaeological resources have been previously recorded within or immediately adjacent to the Project area. The majority of the archaeological sites documented within the record search area are of prehistoric bedrock milling features which are located approximately a half-mile away from the Project area. These results suggest that there is a relatively low potential for encountering substantial prehistoric archaeological remains during construction activities. To avoid or lessen potential risk of impacting tribal cultural resources, **Mitigation Measures CUL-1** through **CUL-7** would be implemented. **Mitigation Measures CUL-1**, **CUL-2**, and **CUL-3** would require agreements and monitoring plans be established prior to any ground-disturbing activities; **Mitigation Measures CUL-4, CUL-5**, and **CUL-6** would require appropriate treatment of any inadvertently discovered artifacts. **Mitigation Measure CUL-7** would ensure proper procedures are in place if human remains are discovered during construction and for the remains to be analyzed to determine origin and disposition pursuant to PRC Section 5097.98. With the implementation of **Mitigation Measures CUL-1** through **CUL-7** impacts to tribal cultural resources would be less than significant.

Mitigation Measures: Refer to **Mitigation Measures CUL-1** through **CUL-7** in *Section 3.5 Cultural Resources.*

3.19 Utilities and Service Systems

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporated*	*Less than Significant Impact*	*No Impact*
Would the Project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	[ ]	[X]	[ ]	[ ]
b) Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	[ ]	[ ]	[ ]	[X]

c) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	[ ]	[ ]	[X]	[ ]
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	[ ]	[ ]	[X]	[ ]
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	[ ]	[ ]	[X]	[ ]

Discussion

Water Supply

EMWD is the primary water purveyor in Moreno Valley and provides potable water, recycled water, and wastewater services for the proposed Project area. The majority of EMWD's supply is imported from the MWD via the State Water Project and the Colorado River Aqueduct for potable and non-potable use and groundwater recharge. Groundwater is also pumped from the Hemet/San Jacinto and West San Jacinto areas of the San Jacinto Groundwater Basin to offset imported water supplies. Groundwater in portions of the West San Jacinto Basin is high in salinity and requires desalination treatment in one of two EMWD desalination plants before potable use (EMWD 2016).

Wastewater and Recycled Water

EMWD provides wastewater collection, treatment, and recycled water services in the proposed Project area. EMWD currently treats approximately 46 million gallons per day (mgd) of wastewater at its four active regional water reclamation facilities (RWRF) (EMWD n.d.b). Wastewater collected in the Perris North Management Zone, which encompasses the proposed Project area, is treated at RWRFs located in Moreno Valley, Perris Valley, and Sun City. During 2018, the Moreno Valley RWRF, which is the RWRF closest to the Project area, treated a total of 10,909 AF of wastewater. The Moreno Valley RWRF facility has a capacity of 21 mgd, with build out capacity to 41 mgd (EMWD 2019).

EMWD owns, operates, and maintains a recycled water system in conjunction with the RWRFs. The Moreno Valley RWRF is located at 17140 Kitching Street, south of the

proposed Project area. Recycled water is used extensively in EMWD's service area and EMWD regularly uses 100 percent of its recycled water supply for beneficial use. Approximately 47 percent of the recycled water is used for agricultural irrigation, 35 percent for municipal and industrial use, and 18 percent for irrigated landscaping, golf courses, construction, and habitat creation (EMWD 2019). EMWD also produces recycled water supply for distribution to retail and wholesale customers.

Stormwater

The RCFCWCD provides regional stormwater and flood control protection for the proposed Project area. The City of Moreno Valley has the responsibility for design, construction, and maintenance of local drainage facilities, including road curb and gutter and roadside ditches (City of Moreno Valley 2006a). Existing stormwater infrastructure in the Project area includes large drainage channels along the west side of Kitching Street, along the east side of Camino Flores, and east of Heacock Street abutting the residential property lines. Stormwater quality and flooding potential in the proposed Project area are described in *Section 3.10 Hydrology and Water Quality*.

Solid Waste

Waste pickup within the proposed Project area is provided by Waste Management of Inland Empire and is primarily deposited in the Riverside County Waste Management District (RCWMD)'s Badlands Landfill (31125 Ironwood Avenue, Moreno Valley). However, trash haulers can also use other County landfills such as the Lamb Canyon Landfill (16411 Lamb Canyon Road, Beaumont) and El Sobrante Landfill (10910 Dawson Canyon Road, Corona). All Riverside County landfills are Class III disposal sites permitted to receive non-hazardous municipal solid waste. (City of Moreno Valley 2006b).

Utilities

Electrical service in the proposed Project area is provided by MVU and SCE (City of Moreno Valley 2006a). MVU was established in 2001 to provide electrical service to new residents and businesses within areas of the City that are being converted from fallow or agricultural lands to housing, commercial and industrial uses. MVU's service area extends from the City boundary in the south up to Bay Avenue, covering the majority of the proposed Project area. Electrical service for the proposed Project alignment between Bay Avenue and Cottonwood Avenue (bound by Heacock Street and Indian Street) is provided by SCE. Natural gas service for the entire proposed Project area is provided by the Southern California Gas Company (City of Moreno Valley Financial and Management Services n.d.).

a) Less than Significant with Mitigation Incorporated

The proposed Project would construct groundwater extraction wells, raw and treated water pipelines, and a water treatment/blending facility in the Perris North Groundwater Management Zone. Stormwater drainage facilities would be constructed at the treatment/blending site to capture and convey onsite storm water runoff to the local storm

drain system in accordance with applicable municipal stormwater drainage design and water quality control requirements. The Project would not require improvements to the existing municipal storm water drain system as only minor increases in runoff would occur. As discussed in *Section 3.14 Population and Housing*, the proposed Project would serve existing and planned communities and would not induce unplanned population or employment growth that would require or result in the construction of new or expanded water, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities. As explained in *Section 2.6 Proposed Project Description*, the proposed wells and treatment/blending facilities would use up to 6,482,400 kWh/year (6.5 gigawatt hours [GWh]) per year of electricity. In 2018 MVU and SCE each used 193 GWh and 85,276 GWh, respectively (CEC n.d.). The demands of the proposed Project would be relatively small compared to the overall capacity of the local electrical utilities. Therefore, the Project would not result in the need to construct new electrical facilities. The environmental impacts of the proposed Project's new water production and associated conveyance and treatment facilities are evaluated throughout this IS/MND and are anticipated to all be mitigated to a less than significant level.

b) No Impact

The proposed Project involves expansion of EMWD's water service infrastructure within its existing service area to augment water supply reliability and offset imported water. Construction of the proposed Project would require a minimal water supply for purposes such as dust control and concrete mixing. Existing sources would be sufficient and no new or expanded supply would be required for construction. Operation of the proposed Project would not induce unplanned population growth that would require or result in the construction of new water treatment facilities or the expansion of existing facilities. The supply would accommodate existing water demand and is consistent with planned growth anticipated in the 2015 UWMP. No impact related to sufficient water supplies would occur.

c) Less than Significant Impact

The proposed Project would construct groundwater extraction, treatment/blending, and distribution infrastructure and would not induce unplanned population growth that would result in or require expansion of existing wastewater collection or treatment services. The proposed Project would discharge brackish or backwash water from the central treatment and blending facility to the sanitary sewer system, which is operated by EMWD. The amount of wastewater discharged into the sanitary sewer system would be small compared to the approximately 43 mgd of wastewater EMWD treats throughout its service area and is not expected to require expansion of existing wastewater treatment services. Therefore, impacts would be less than significant.

d) Less than Significant Impact

Construction of the proposed Project would generate soil and asphalt waste during installation of underground pipelines, installation of wells, and construction of the treatment/blending facilities. While excavated soil would be reused onsite as backfill to the extent feasible, it is estimated that approximately 41,800 cy of material would need to

be disposed at a permitted landfill in accordance with local and state solid waste disposal requirements. There are two State regulations that set standards for solid waste generation: AB 939 mandates 50 percent diversion of solid waste; and AB 341 mandates recycling programs to help reduce GHG emissions. According to the City of Moreno Valley's 2006 General Plan, the Badlands sanitary landfill had an overall remaining disposal capacity of approximately 9,804,704.62 tons of solid waste for disposal and was expected to reach capacity between 2018 and 2020 (City of Moreno Valley 2006b). The landfill however, submitted a Revised Solid Waste Facilities Permit to Riverside County in 2011 to increase design capacity from 30,386,993 cy to 33,560,993 (CalRecycle n.d). This changed the anticipated closure date to 2024. Construction of the proposed Project would be complete by 2023. Therefore, the existing landfills would have a total permitted area to accommodate construction debris from the proposed Project. Excess construction debris is reasonably anticipated to be within the permitted capacity of the Moreno Valley and Riverside County landfills after onsite backfill of excavated soil combined with adherence to mandatory construction waste diversion requirements.

Operation of the proposed Project is not anticipated to generate long-term solid waste. Therefore, solid waste generation would be limited to temporary construction activities and would not affect available solid waste disposal capacity in the region. Therefore, impacts related to local infrastructure capacity would be less than significant, and no mitigation would be required.

e) Less than Significant Impact

Construction and operation of the proposed Project would comply with local, State, and federal regulations related to solid waste. While operation of the proposed Project is not anticipated to generate a significant amount of long-term solid waste, construction activities would create debris such as excavated soil and asphalt. Excavated soil would be backfilled to the extent possible, but construction contractor(s) would be required to dispose of excess construction debris in accordance with existing reduction statutes (AB 939 and AB 341) and regulations. These regulations would determine the landfill to be used for disposal of construction debris, disposal of solid waste from operation of the water treatment facility, mandatory 50 percent diversion of solid waste (AB 939), and mandatory recycling programs to reduce GHG emissions (AB 341). Therefore, impacts related to compliance with local, State, and federal reduction statues and regulations would be less than significant, and no mitigation would be required.

Mitigation Measures: No additional mitigation measures required or recommended.

3.20 Wildfire

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

Discussion

The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forests and rangelands, analyzes their conditions and identifies alternative management and policy

guidelines (https://frap.fire.ca.gov/). FRAP maps are used to identify areas of VHFHSZ within LRAs. The proposed Project is located within the Moreno Valley LRA and is designated as non- VHFHSZ (FRAP 2009).

The City of Moreno Valley EOP provides guidance for the City's response to extraordinary emergency situations associated with natural, man-made and technological disasters. While the EOP is a preparedness document and is designed to be read, understood, and exercised prior to an emergency, emergency evacuation plans should be viewed as living documents because communities change and integrating the needs of individuals with differing access and functional needs is a dynamic process. The OEM is responsible for working and communicating with local community stakeholders to practice, review, revise, and update plans to reflect changes in technology, personnel, and procedures (City of Moreno Valley 2019a).

The City of Moreno Valley Local Hazard Mitigation Plan (LHMP) is designed to reduce or eliminate long-term natural or man-made hazard risks and communicate the City's corresponding mitigation strategy. Components of the plan include hazard identification, asset inventory, risk analysis, loss estimation, and a mitigation strategy to reduce the effects of hazards in the City. Figure 12-2 of the LHMP shows the Moreno Valley Evacuation Routes Map 2016 (City of Moreno Valley 2017).

a) Less than Significant with Mitigation Incorporated

Construction activities would be located primarily within easements, public rights of way, open space (parks), and vacant, EMWD-owned land. Potential staging areas include vacant areas within the proposed treatment/blending facility site options. Sidewalk and lane closures during construction would temporarily restrict access for use by emergency response vehicles or emergency evacuations and could impair implementation of or physically interfere with the City's adopted EOP. Implementation of **Mitigation Measure TRA-1** would require EMWD to develop a Traffic Control Plan, which would reduce conflict between Project construction activities and the EOP and LHMP by requiring coordination with emergency services (police, fire, and others); requiring identification of roadways and access points for emergency services; and requiring that disruptions to or closures of these locations be minimized. Impacts of construction on the adopted emergency evacuation plan would be less than significant with mitigation incorporated. Further consideration of the proposed construction activities and potential for roadway access and hazardous conditions can be found under *Section 3.17 Transportation*.

Operation of the proposed Project would not physically impair or otherwise interfere with adopted emergency response or evacuation plans in the Project area as all ground surfaces of existing rights of way would be returned to pre-construction conditions after excavation and below-grade pipeline installation. The Project would involve minimal additional vehicles being added to roadways (bi-weekly visits by an EMWD operator, monthly routine maintenance, monthly chemical delivery, annual inspection of the GAC Media, monthly inspections of the wells, and tanker truck trips every four or five days to the IEBL disposal site); therefore, the Project would not interfere with emergency

evacuation plans. Therefore, impacts would be less than significant with mitigation incorporated.

b) No Impact

The proposed Project area is designated as non-VHFHSZ within the Moreno Valley LRA. Pipelines would be installed below grade within public rights of way and well extraction sites and the treatment facility would be located on parcels that do not have steep slopes. Construction of the proposed Project wells and treatment facility vacant parcels would replace sparse grasses with low-profile concrete, steel infrastructure and treatment/blending facilities, reducing potential wildfire fuel. No impacts would occur.

c) No Impact

The proposed Project would not involve the installation or maintenance of infrastructure that is typically associated with fire risk, such as roads, fuel breaks, emergency water sources, or power lines. The proposed Project would rely on existing roads and utilities. Installation of pipelines would occur within existing easements and roadways; well sites and the treatment facility would be located within open space and vacant EMWD-owned land. The proposed Project area is designated as non-VHFHSZ within the Moreno Valley LRA. No impact would occur.

d) No Impact

The proposed Project would be located within existing public rights-of-way, open space, and vacant EMWD-owned land. Pipelines would be installed below-grade and overlying ground surface will be restored to pre-construction conditions, resulting in no permanent impact on site drainage. Construction of the well sites and treatment facility would occur within vacant lots or parks that do not have steep slopes susceptible to landslides. While installation of the wells and treatment facility would replace existing soil and grass with impervious concrete and steel infrastructure, proposed Project sites are not located on a downward slope that would result in increased drainage or runoff that could contribute to post-fire slope instability, landslides, or flooding. The proposed Project would have a less than significant impact related to increasing impervious surfaces and stormwater runoff (see *Section 3.10 Hydrology and Water Quality*). No impact would occur.

Mitigation Measures: Refer to **Mitigation Measure TRA-1** in *Section 3.17 Transportation*.

3.21 Mandatory Findings of Significance

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

Discussion

a) Less Than Significant with Mitigation Incorporated

With the implementation of mitigation measures, the proposed Project would have a less than significant impact on the environment. Potential construction impacts on burrowing owl, horned larks, and common avian species such as mourning doves and house finches

would be reduced to a less than significant level through the implementation of **Mitigation Measures BIO-1** and **BIO-2**. No cultural or archaeological resources were identified within the area that would be directly impacted by the Project activities plus a one-half-mile buffer; however, there is a potential for previously unknown cultural material to exist at Project sites. With the implementation of **Mitigation Measures CUL-1** through **CUL-7**, potentially significant impacts on cultural resources would be reduced to less than significant. The Project site overlies Holocene deposits, which have low paleontological sensitivity, overlying Pleistocene sediments at a depth of approximately 11 feet, which have high paleontological sensitivity. Impacts on paleontological resources are not anticipated because Fossiliferous deposits have the potential to occur at greater depths than most of the proposed Project ground disturbance. To ensure proper procedures are in place in the event of an unanticipated fossil discovery, **Mitigation Measure GEO-1** would be implemented during all construction phases of the Project. **Mitigation Measure GEO-1** would ensure any unanticipated fossil discovered onsite would be preserved, and potential impacts on paleontological resources would be less than significant.

b) Less Than Significant

According to CEQA Guidelines Section 15130(b) there are two approaches to discussing cumulative project impacts: either the *List-of-Projects Method:* a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or the *Summary-of-Projections Method:* a summary of projections contained in an adopted general plan or related planning document or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. EMWD is relying on the *List-of-Projects* method for purposes of this analysis. The Cactus Avenue Corridor Groundwater Wells Project is currently being considered as one project of several within a grant application to the State Water Board called the Perris North Groundwater Program. The other projects include projects that would result in the construction and operation of groundwater monitoring wells, extraction wells, treatment and distribution facilities also within the Perris North Basin. The other projects include the following:

- Well 204 Project Cactus Avenue Corridor Groundwater Wells Project;
- Perris North Groundwater Monitoring Project; and
- Well 65/66 Project.

The Well 204 Project consists of the development of one extraction well, a water treatment plant and pipelines in the Perris South Sub-Area of the basin. The Perris North Groundwater Monitoring Project is designed to monitor the presence of groundwater COCs from nonpoint sources throughout the Perris North Basin. The Groundwater Monitoring project consists of up to ten monitoring wells that would be constructed at various locations within the Perris North Groundwater Management Zone. The Well 65/66 Project consists of the development and use of two new groundwater wells and water

treatment plant also within the Perris North Basin. Although related due to their inclusion in the grant application, each project is a stand-alone project independent of the other for project implementation.

Construction of these projects would occur at different times and sites far enough removed from each other that construction related cumulative effects such as fugitive dust and construction noise would be less than significant. Development would adhere to applicable rules and regulations related to dust suppression, traffic control, storm water control, handling/storage of hazardous materials, and regulations related to protections for plants/animals/waters of the State and U.S. Cumulative impacts in these areas are also considered less than significant. The only operational vehicle trips associated with the various projects listed above would be the infrequent monitoring/maintenance trips and brine disposal trips, which would result in an insignificant cumulative increase on area roadways separated in time and distance. Cumulative noise and air quality effects from these projects would also be less-than-significant due to their minimal contribution. Therefore, these projects are not expected to create impacts that are individually limited, but cumulatively considerable.

In addition to, and separate from, the Perris North groundwater Program, EMWD is undertaking the Cactus II Feeder pipeline project, which will convey MWD water to EMWD's potable system. Turnout 2 for the Cactus II Feeder pipeline project is located at the same site as the proposed Project Option #1 Treatment Facility site. The Cactus II Feeder Turnout 2 would be constructed on the western one-third of this site through January 2023. The eastern two-thirds of the site would be available for construction of the proposed treatment and blending facility and extraction well, if the site is selected. The main equipment storage/staging area for the Project would be located at the selected treatment facility site. If the Option #1 Treatment Facility site is selected, it may not be large enough to accommodate all of the equipment storage/staging for the proposed Project and simultaneous construction of the Cactus II Feeder Turnout 2. If the treatment facility site cannot accommodate all equipment storage/staging for the proposed Project, other existing EMWD property would be utilized, as necessary, for staging and intermediate storage for the installation of the water pipelines, or the contractor would be responsible for securing suitable temporary equipment storage/staging site(s) prior to construction, as well as implementing applicable environmental commitments at the staging area(s). Therefore, the cumulative effect is not expected to be considerable.

The proposed Project would not have impacts that are individually limited, but cumulatively considerable. The impacts of the proposed Project have been analyzed in accordance with the CEQA Guidelines; each topic has been found to have either no impact, a less than significant impact, or a less than significant impact with mitigation incorporated. The Project is of a limited scale, and, taken in sum with other projects in the area, would not produce cumulatively considerable impacts to the environment or human beings. Therefore, cumulative impacts of the proposed Project would be less than significant.

c) Less Than Significant with Mitigation Incorporated

The proposed Project has the potential to exceed SCAQMD Regional Thresholds for NO_X emissions during construction. However, with the implementation of **Mitigation Measure AIR-1**, requiring the use of construction equipment with Tier 4 engines, these impacts would be reduced below the SCAQMD Regional Thresholds, and the impact would be less than significant.

The proposed Project could degrade public views and visual character in the Project area. To minimize visual impacts on public views, **Mitigation Measure AES-1** would require permanent, aboveground structures (treatment/blending facility, extraction well houses) to be designed to blend into the existing visual character of their surroundings, including building and wall height, color, and exterior architectural treatments. The Project would also cause light and glare impacts on surrounding land uses and night sky viewing during construction. In responses, **Mitigation Measure AES-2** would require all nighttime construction lighting to be of the lowest illumination necessary for Project construction, attached to motion sensors, and shielded and directed downward to avoid light spillage onto neighboring properties. **Mitigation Measure AES-3** would require all permanent nighttime lighting and fixtures to comply with Riverside County Ordinance No. 655 for Zone B of the Mount Palomar Nighttime Lighting Policy Area.

The proposed Project may expose the community, including sensitive receptors, to noise from Project construction and operation. **Mitigation Measure NOI-1** would ensure that construction noise is reduced using BMPs, and **Mitigation Measure NOI-2** would require the use of noise barriers to reduce the noise level at sensitive receptors to the maximum extent possible. Noise resulting from Project operation would be minimized by designing the facilities to meet operational noise standards and no mitigation would be necessary. With these mitigation measures in place, the proposed Project would have a less than significant impact on human beings as a result of noise.

Although all existing applicable regulations would be followed by the Project, during construction, there is generally the potential for hazardous materials associated with typical construction activities to be released. **Mitigation Measure HAZ-1** would minimize the risk of hazardous material exposure through material use and accidents by requiring EMWD and its construction contractor to develop a Hazardous Materials Management and Spill Prevention and Control Plan to ensure project-specific contingencies are in place.

Construction of the proposed Project may require temporary closures of traffic lanes and rerouting of bicycle and pedestrian traffic. These closures could impact humans if these they reduce pedestrian, bicycle, or vehicle safety, or if they impede emergency access for emergency responders. With the implementation of **Mitigation Measure TRA-1**, which requires a traffic control plan to address such impacts, transportation and related safety impacts would be less than significant.

The impacts of the proposed Project have been analyzed in accordance with the CEQA Guidelines; each topic has been found to have either no impact, a less than significant

impact, or a less than significant impact with mitigation incorporated. Therefore, with the implementation of the mitigation measures noted above, the proposed Project would not result in any environmental effects that would cause substantial adverse effects on human beings either directly or indirectly.

Mitigation Measures: See **Mitigation Measures AIR-1, BIO-1, BIO-2, CUL-1, CUL-2, CUL-3, CUL-4, CUL-5, CUL-6, CUL-7, GEO-1, HAZ-1, NOI-1**, **NOI-2**, and **TRA-1**.

4. FEDERAL CROSS-CUTTING ENVIRONMENTAL REGULATION EVALUATION

Should the proposed Project apply for funding from a federal program (U.S. Department of the Interior, Bureau of Reclamation) or a partially funded federal program (SWRCB's Clean Water State Revolving Fund [CWSRF] and DWSRF), federal environmental review requirements must be met. Although CEQA was modeled after the National Environmental Policy Act (NEPA), where there are differences between the State's process under CEQA and the applicable federal statutes and regulations, the federal statutes and regulations must be followed for a federal entity to fulfill its NEPA review requirements before releasing federal funds. Compliance is set out in the CFR at 40 CFR Section 35.3575 (Application of Federal cross-cutting authorities) and 7 CFR Section 1970 (Environmental Policies and Procedures).

This section describes the proposed Project's status of compliance with the federal cross-cutting regulations (also referred to as CEQA-Plus) and the consultation that has or will occur. These policies and procedures are based on the SWRCB's Appendix I: State Environmental Review Process[3], which addresses the EPA review requirements that build upon the State environmental review requirements under CEQA.

4.1 Federal Endangered Species Act

The FESA establishes a program for the conservation of threatened and endangered plants and animals and the habitats in which they depend. Section 7 (16 United States Code [U.S.C.] Section 1531 *et seq.*) requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of designated critical habitat. If a project could result in an incidental (unintentional but not unexpected) take of a threatened or endangered (listed) species, federal agencies must undergo consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) to obtain a Biological Opinion (BO). If the federal agency finds that the project is not likely to adversely affect listed species, the federal agency can consult informally, and if USFWS and NFMS agree with that finding, a concurrence letter can be issued. If the BO finds that the project could jeopardize the existence or habitat of a listed species ("jeopardy" opinion), the agency cannot authorize the project until it is modified to obtain a "non-jeopardy" opinion.

As described in *Section 3.4 Biological Resources*, the Project site does not contain suitable habitat for any special status plant and most special status wildlife species. While ten sensitive plant species are known or have the potential to occur within a five-mile

[3] https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/policy0513/appendix_i_envguide.pdf

radius of the Project site according to the CDFW CNDDB, and BIOS databases, and the USFWS Critical Habitat Portal and IPaC systems, it was determined that sensitive plant species are not expected to occur on the Project sites due to the lack of specific habitats or suitable substrates as well as the high levels of historic and existing disturbance.

Of the 30 special status wildlife species known or have the potential to occur within five miles of the Project site, 28 of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland). While potential habitat within the Project site exists for the BUOW and the California horned lark, the habitat is low quality and the potential for these species to occur is low due to the sites' location within a heavily travelled urban area and high levels of existing disturbance. No horned larks, burrowing owls or signs of either species (e.g., pellets or white wash) were observed during the reconnaissance field survey. Nonetheless, **Mitigation Measure BIO-1** would be implemented to ensure avoidance of direct impacts on burrowing owls and **Mitigation Measure BIO-2** would be implemented to avoid impacts to nesting birds in potential Project sites that contain trees. Therefore, the Project is not expected to result in direct or indirect impacts to special status plant or wildlife species or jeopardize any listed species and EMWD would be in compliance with the FESA

4.2 National Historic Preservation Act

The NHPA (16 U.S.C. Section 470) establishes a program to protect, preserve, rehabilitate, and restore significant historical, archaeological, and cultural resources. Section 106 requires federal agencies to take into account effects on historic properties and involves a step-by-step procedure described in detail in the implementing regulations (36 CFR Part 800).

As described in *Section 3.5 Cultural Resources*, the cultural resource assessment was conducted for the proposed Project area and is provided in **Appendix C**. The analysis includes a Section 106 evaluation for the proposed Project and can be submitted as part of the consultation process with the State Historic Preservation Officer (SHPO). Completion of the cultural resources report and concurrence by SHPO would ensure compliance with the NHPA.

A total of 16 cultural resources have been previously recorded within a one-half-mile radius of the Project. These include five prehistoric archaeological sites, two prehistoric isolated artifacts or features, three historic-period archaeological sites, and six historic-period built-environment (buildings and structures) resources. None of these previously recorded cultural resources are located within the proposed Project APE. In addition, based on results of a search of the Sacred Lands File at the NAHC, Native American and local historic group consultation, and field survey, no cultural resources were identified in the Project's APE. The lack of surface evidence however does not preclude subsurface existence of archaeological or cultural resources. With implementation of **Mitigation Measures CUL-1** through **CUL-7**, the Project is expected to have a less than significant impact to historical and archaeological resources and no historic properties are affected under Section 106 of the NHPA.

4.3 Clean Air Act

The U.S. Congress adopted general conformity requirements as part of the CAA Amendments in 1990 and the EPA implemented those requirements in 1993 (Sec. 176 of the CAA (42 U.S.C. Section 7506) and 40 CFR Part 93, Subpart B). General Conformity requires that all federal actions "conform" with the State Implementation Plan (SIP) as approved or promulgated by EPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain the national ambient air quality standards. Before a federal action is taken, it must be evaluated for conformity with the SIP. All "reasonably foreseeable" emissions predicted to result from the action are taken into consideration. These include direct and indirect emissions and must be identified as to location and quantity. If it is found that the action would create emissions above de minimis threshold (minimum threshold for which a conformity determination must be performed) levels specified in EPA regulations (40 CFR Section 93.153(b)), or if the activity is considered "regionally significant" because its emissions exceed 10 percent of an area's total emissions, the action cannot proceed unless mitigation measures are specified that would bring the proposed project into conformity.

As described in *Section 3.3 Air Quality*, the Project lies within the SCAB, which is designated nonattainment for ozone, particulate matter, and lead (see **Table 3-1**). The results of the air quality modeling showed that pollutant emissions would not exceed SCAB General Conformity de minimis thresholds (**Table 3-8**). These general conformity thresholds are consistent with the EPA's federal general conformity de minimis rate tables[4]. Therefore, the general conformity requirements do not apply to the Project's emissions, it is exempt from a conformity determination, and the Project would comply with the CAA.

4.4 Coastal Zone Management Act

The CZMA (16 U.S.C. Section 1451 *et seq.*) is managed by NOAA's Office of Ocean and Coastal Resource Management and designed to balance land and water issues in coastal zones. It also aims to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Within California, the CZMA is administered by the San Francisco Bay Conservation and Development Commission, the California Coastal Conservancy, and the California Coastal Commission.

As described in *Section 3.10 Hydrology and Water Quality*, the proposed Project site is located approximately 40 miles from the Pacific Ocean. Therefore, no portion of the proposed Project is within the coastal zone and the CZMA does not apply.

[4] https://www.epa.gov/general-conformity/de-minimis-tables

4.5 Farmland Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. Section 4201 *et seq.*) requires a federal agency to consider the effects of its actions and programs on the nation's farmlands. The FPPA is intended to minimize the impacts of federal programs with respect to the conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland.

As described in *Section 3.2 Agriculture and Forestry Resources*, none of the potential Project sites or pipeline alignments are classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The treatment facility site option at Alessandro Boulevard and Kitching Street is designated as Farmland of Local Importance (CDOC 2016). However, none of the sites are currently used for agriculture. Therefore, the proposed Project would have no impact on the Farmland Protection Policy Act.

4.6 Executive Order 11988—Floodplain Management

EO 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains. As described under *Section 3.10 Hydrology and Water Quality* and shown in **Figure 3-1**, none of the Project sites are located within the 100- or 500-year flood zone. The storm channel that travels along Kitching Street, the storm channel that travels southwest across Cottonwood Avenue to the intersection of Heacock Street and Alessandro Boulevard, and the storm channel along Camino Flores, are sized to contain the 100-year flood. The pipelines, once constructed, would be located underground and not susceptible to inundation in the event of flooding. Areas outside the storm channels themselves, including well and treatment facility sites, are not located in flood areas and, therefore, risk of floods inundating these sites is low. The proposed Project would not permanently alter existing flood channels, rivers, or floodplains. Because there would be no facilities located within the floodplain, the proposed Project would not increase flood hazards or interfere with floodplain management. The Project would be in compliance with this EO.

4.7 Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168

The Migratory Bird Treaty Act (16 U.S.C. Sections 703–712) and the Bald and Golden Eagle Protection Act (16 U.S.C. Section 668-668c) prohibit the take of migratory birds (or any part, nest, or eggs of any such bird) and the take and commerce of eagles. EO 13168 requires that any project with federal involvement address impacts of federal actions on migratory birds.

As described in *Section 3.4 Biological Resources*, nesting habitat within the Project is considered low quality due to existing disturbances and proximity to heavily travelled roadways. No nests or birds exhibiting nesting behaviors were observed during the reconnaissance site visit performed as part of the Biological Resources Assessment. The Project would have a less than significant impact on nesting birds with implementation of

Mitigation Measure BIO-1 Burrowing Owl Preconstruction Clearance Survey to ensure avoidance of direct impacts to burrowing owls and **BIO-2 Preconstruction Nesting Bird Survey** to avoid impacts to nesting birds, including those protected under the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and EO 13168, in potential Project sites that contain trees. Therefore, EMWD would be in compliance with the Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168.

4.8 Fish and Wildlife Coordination Act

The FWCA as amended (16 U.S.C. Section 661 *et seq.*) is intended to promote conservation of fish and wildlife resources by preventing their loss or damage, and to provide for development and improvement of fish and wildlife resources in connection with water projects. Federal agencies undertaking water projects are required to fully consider recommendations made by USFWS, NMFS, and State wildlife agencies when any waterbody is impounded, diverted, controlled, or modified for any purpose. Compliance with FWCA is to be coordinated with FESA consultation.

The proposed Project would not impound, divert or control surface water source; however, it would modify a groundwater source. The proposed Project would extract and treat contaminated groundwater from the Perris North Groundwater Management Zone for beneficial use as potable supply. The Project is part of EMWD's ongoing groundwater management in the basin. Currently, the groundwater contains COCs including PCE, VOCs, nitrate, perchlorate, TDS, fluoride, and manganese (co-mingled VOC-Nitrate Plume). EMWD has been managing groundwater quantity and quality via the Annual West San Jacinto Groundwater Management Plan since 1995. Water levels were drawn down to historic lows in the middle of the 20th century and have been slowly rising since that time. The Project is located in an area of rising groundwater levels and would extract approximately 3,700 AFY. In addition to the existing groundwater management program, EMWD is required to complete a GSP by January 2022, which is one year prior the Project becoming operational. The Project would produce water from the basin in a sustainable manner consistent with the San Jacinto Groundwater Management Plan, the GSP and consistent with the siting criteria described in *Section 2.1 Project Overview*. The Project would also remove existing COCs from the basin. Therefore, the Project would not substantially decrease groundwater supplies or interfere with groundwater recharge such that there would be an adverse effect on fish and wildlife resources. The proposed Project would not conflict with the Fish and Wildlife Coordination Act.

4.9 Executive Order 11990—Protection of Wetlands

Under EO 11990, federal agencies must avoid affecting wetlands unless it is determined that no practicable alternative is available. The EO directs federal agencies to provide leadership and act to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works.

As described in *Section 3.4 Biological Resources*, no waters or wetlands potentially subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), RWQCB, or CDFW are located within the Project. Therefore, there would be no impacts to wetlands and the EMWD would be in compliance with EO 11990.

4.10 Executive Order 13112—Invasive Species

Under EO 13112, federal agencies must prevent and control introductions of invasive non-native species in a cost-effective and environmentally conscious manner to minimize their economic, ecological, and human health impacts. As directed by this EO, a national invasive species management plan guides federal actions to minimize invasive species and their impacts. To support implementation of this plan, USACE released a memorandum describing the USACE Invasive Species Policy[5]. As part of this policy, all civil works projects are required to address invasive species and potential impacts the project may have.

Non-native plant species were observed in the Project area during the field survey conducted for the Biological Resources Assessment. Measures that control spread of invasive species during construction will be implemented, such as using excavated soil onsite as fill to the extent possible and cleaning construction vehicle track-out on unpaved roads. In areas where revegetation is required, use of native species will be required, per the SWPPP, to ensure that introduction of invasive species does not occur. EMWD would therefore be in compliance with EO 13112.

4.11 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (6 U.S.C. Section 1271 *et seq*.) was passed to preserve and protect designated rivers for their natural, cultural, and recreational value.

There are no designated Wild and Scenic Rivers within the project area, nor will any designated rivers be adversely affected by the proposed Project. As a result, the Project would not result in any impacts related to the Wild and Scenic Rivers Act.

4.12 Safe Drinking Water Act—Source Water Protection

Section 1424(e) of the Safe Drinking Water Act (42 U.S.C. Section 300f *et seq*.) established the EPA's Sole Source Aquifer Program. This program protects communities from groundwater contamination from federally funded projects.

Within EPA's Region 9, which includes California, there are nine sole source aquifers. None of these sole source aquifers are located within the proposed Project area (EPA 2019). Therefore, the Sole Source Aquifer Program does not apply to the proposed

[5] https://www.nae.usace.army.mil/Portals/74/docs/regulatory/InvasiveSpecies/policy.pdf

Project and the Project would be in compliance with Section 1424(e) of the Safe Drinking Water Act.

4.13 Executive Order 13195—Trails for America in the 21st Century

The EO 13195 requires federal agencies to protect, connect, promote, and assist trails of all types throughout the Unites States.

According to *Section 3.15 Public Services*, there are no trails within the proposed Project sites or that will be temporarily or permanently impacted by the proposed Project. As a result, no adverse effects on trials would occur and the Project would be in compliance with EO 13195.

4.14 Executive Order 13007—Indian Sacred Sites

Sacred Sites are defined in EO 13007 as "any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

As discussed in *Section 3.18 Tribal Cultural Resources*, a search of the Sacred Lands File at the NAHC was performed as part of the Project's Cultural Resources Assessment Report and returned negative results. EMWD also conducted consultation with local Native American groups and local historical societies to obtain additional information and performed an intensive pedestrian survey within the Project's APE. Based on the results of these efforts, no Indian sacred sites were identified in the Project's APE that would be impacted or adversely affected by the Project. However, the lack of surface evidence of archaeological remains does not mean there are no cultural resources to be found below surface. Implementation of **Mitigation Measure CUL-1, CUL-2,** and **CUL-3** would require agreements and monitoring plans be established prior to any ground-disturbing activities. **Mitigation Measures CUL-4, CUL-5**, and **CUL-6** would require appropriate treatment of any inadvertently discovered artifacts. **Mitigation Measure CUL-7 Human Remains** would ensure proper procedures are in place if human remains are discovered during construction and for the remains to analyzed to determine origin and disposition pursuant to PRC Section 5097.98. With the implementation of **Mitigation Measure CUL-1** through **CUL-7** the Project would have a less than significant impact to tribal cultural resources and EMWD would be in compliance with EO 13007.

4.15 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act as amended (16 U.S.C. Section 1801 *et seq*.) is the primary act governing federal management of fisheries in federal waters, from the 3-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone (EEZ). It establishes exclusive U.S. management authority over all fishing within the EEZ, all anadromous fish throughout their migratory

range except when in a foreign nation's waters, and all fish on the continental shelf. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The act also requires federal agencies to consult with the NMFS on actions that could damage Essential Fish Habitat (EFH), as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297). EFH includes those habitats that support the different life stages of each managed species. A single species may use different habitats that consist of both the water column and underlying surface (e.g. streambed) throughout its life to support breeding, spawning, nursery, feeding, and protection functions.

As described in *Section 3.4 Biological Resources* the Project would not be located in or impact any U.S. federal waters regulated under the Magnuson-Stevens Act. Therefore, the Project would have no impact on resident or migratory fish or fish habitat in the Project area and the EMWD would comply with the Magnuson-Stevens Act.

4.16 Environmental Justice

This section describes the existing socioeconomic resources in the proposed Project area and the regulatory setting pertaining to environmental justice-related issues. This section also evaluates the potential for the proposed Project to disproportionately affect minority or low-income groups. The EPA defines environmental justice as:

> "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people, including racial, ethnic, or economic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies (EPA 2016)."

According to EPA guidelines, a minority population is present in a study area if the minority population of the affected area exceeds 50 percent or if the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The proposed Project would be located in central Moreno Valley in west Riverside County. According to the EPA's Environmental Screening and Mapping Tool (EJScreen), as shown in **Figure 4-1**, the majority of the Project area is within the 80–90 percentile and 90–95 percentile minority population. The Project areas west of Heacock Street and north of Cottonwood Avenue are within the 95–100 percentile for minority population. Therefore, the proposed Project area is composed of a minority population exceeding 50 percent.

EPA guidelines recommend that analyses of low-income communities consider the U.S. Census Bureau's poverty level definitions, as well as applicable State and regional definitions of low-income and poverty communities.

DWR defines a Disadvantaged Community (DAC) as a community with a median household income (MHI) less than 80 percent of the California MHI and a Severely Disadvantaged Community (SDAC) as a community with an MHI less than 60 percent of the California MHI. To identify the location of DAC and SDAC communities for its mapping tool, DWR (DWR n.d.), relies on 2012-2016 American Community Survey data, which defines the Statewide MHI was $63,783. A DAC would therefore be a community with an MHI of $51,026 or less and an SDAC would be a community with an MHI of $38,270 or less. According to the DWR Mapping Tool as shown in Figure 4-2, the majority of the Project area is within a DAC, with one section of the Project within an SDAC.

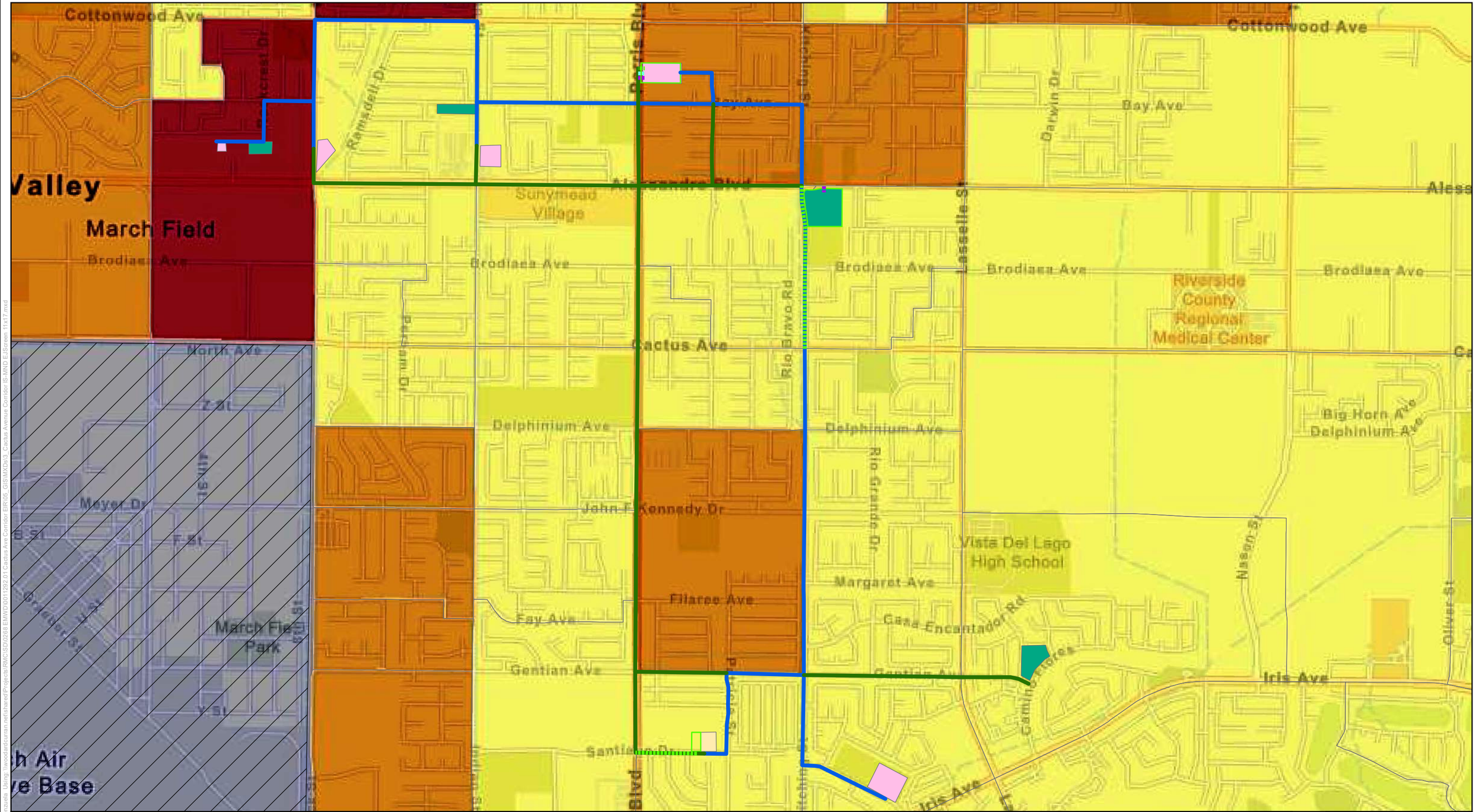

Figure 4-1
Minority Population

Cactus Avenue Corridor
Groundwater Wells Project IS/MND

Legend

- Option 1
- Option 2
- Santiago Well Site
- Treatment Locations
- March Air Reserve Base
- Option 1 Raw Water Pipeline Corridor
- Alternative Raw Water Pipeline Corridors
- Blend Water to Treatment
- Brackish Water to Sewer Pipeline
- Treated Water Pipeline to Distribution

Demographic Index (National Percentiles)

- 95 - 100 percentile
- 90 - 95 percentile
- 80 - 90 percentile
- Less than 50 percentile

N

WOODARD & CURRAN

Map Created: March 2020

0 0.075 0.15 0.3 Miles

Figure Exported: 3/4/2020 By: gvelenzuela Using: \\woodardcurran.net\shared\Projects\RIM\CS\D0268\EMWD\001292.01 Cactus Ave Corridor EIR\05_GIS\MXDs\3_Cactus Avenue Corridor IS-MND EJScreen 11x17.mxd

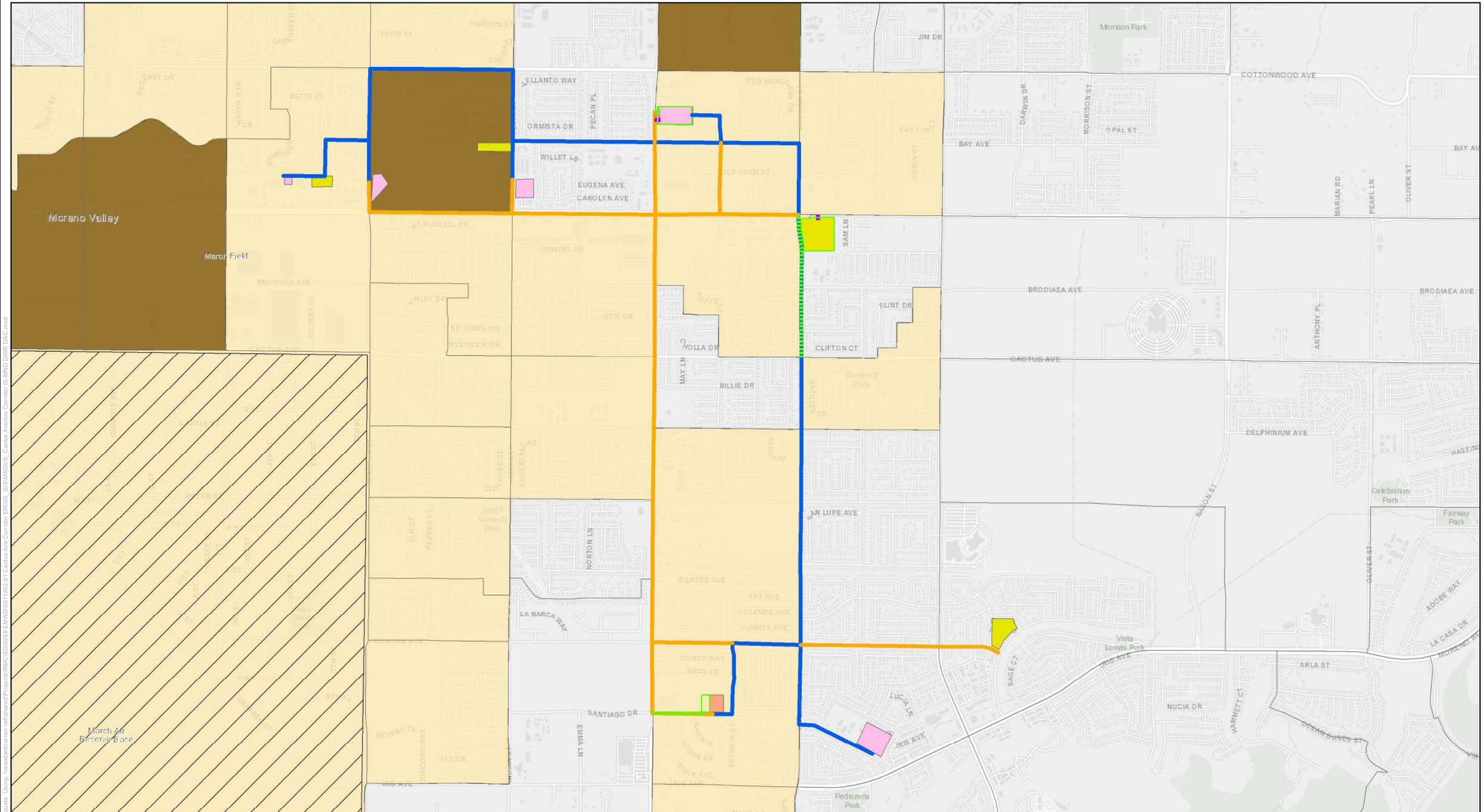

Figure 4-2
Disadvantaged Communities

Cactus Avenue Corridor
Groundwater Wells Project IS/MND

Legend

- Option 1
- Option 2
- Santiago Well Site
- Treatment Locations
- March Air Reserve Base
- Option 1 Raw Water Pipeline Corridor
- Alternative Raw Water Pipeline Corridors
- Blend Water to Treatment
- Brackish Water to Sewer Pipeline
- Future Cactus II Feeder Pipeline (not part of the Project)
- Treated Water Pipeline to Distribution
- Not Disadvantaged Community (MHI > $51,026)
- Disadvantaged Communities ($51,026 < MHI > $38,270)
- Severely Disadvantaged Communities (MHI < $38,270)

N

WOODARD & CURRAN

Map Created: March 2020

0 0.1 0.2 0.4 Miles

Impact Analysis

For the purposes of this analysis, an environmental justice impact would be significant if the proposed Project would directly, indirectly, or cumulatively cause disproportionately high and adverse impacts to minority or low-income populations.

The proposed Project would construct groundwater extraction wells, a treatment facility, and pipelines to help increase water supply reliability in the EMWD service area. Although construction of the proposed Project has the potential for short-term environmental impacts related to air quality, noise, hazards and hazardous materials, and transportation as described in this document, operation of the Project would have the long-term benefit of providing a more reliable potable water source for these communities which area served by EWMD.

Although construction would generate impacts (e.g. air pollutants, hazardous materials, traffic), such activities would be intermittent and temporary and would cease upon completion of work activities. Where potential long-term impacts would occur (e.g. aesthetics, noise), mitigation measures have been identified to reduce such effects to less-than-significant levels. The proposed Project would reduce the amount of parkland available in a Severely Disadvantaged Community by one-half acre if Cactus Corridor Well 3 is located at Option #2, Moreno Valley Bayside Park. If the well is located at Bayside Park, the area available for open green space and walking trails would be reduced from 1.47 acres to 0.97 acres. The well would not remove any of the hardscape features (picnic tables and shelter, playground equipment, barbecues, basketball half-court, and horseshoe pit). Overall, Bayside Park would continue to offer a mix of both valuable hardscape and open green space features. Furthermore, the community immediately around Bayside Park is also served by recreational facilities at Creekside Elementary, March Mountain High School, and Ramona Elementary school (City of Moreno Valley 2010). The community is also within the service radius of the future Cottonwood Neighborhood Park. Therefore, with the consideration of the benefits provided to these communities through implementation of the proposed Project and with the identified mitigation measures, the proposed Project would not result in any disproportionately high and adverse impacts on minority or low-income communities. Thus, no adverse environmental justice impacts would occur.

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APPENDIX A: CALEEMOD OUTPUT

Cactus Corridor Model Run without Tier 4 Engines

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Summer

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Summer

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	35.00	29.00
tblConstructionPhase	NumDays	370.00	288.00

tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20

tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	115.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00
tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00
tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00

tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00
tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8292	114.9967	75.9833	0.1690	36.8185	5.1126	41.7488	20.0432	4.7501	24.6244	0.0000	16,427.4453	16,427.4453	4.3328	0.0000	16,535.7650
2022	17.5646	138.0282	131.0242	0.2923	10.4947	6.2269	16.7216	4.0626	5.9018	9.9644	0.0000	28,049.1184	28,049.1184	6.4969	0.0000	28,211.5402
2023	2.3036	19.5873	22.8548	0.0427	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,070.3120	4,070.3120	0.8566	0.0000	4,091.7276
Maximum	**17.5646**	**138.0282**	**131.0242**	**0.2923**	**36.8185**	**6.2269**	**41.7488**	**20.0432**	**5.9018**	**24.6244**	**0.0000**	**28,049.1184**	**28,049.1184**	**6.4969**	**0.0000**	**28,211.5402**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8292	114.9967	75.9833	0.1690	16.1326	5.1126	21.0629	8.6726	4.7501	13.2538	0.0000	16,427.4452	16,427.4452	4.3328	0.0000	16,535.7650
2022	17.5646	138.0282	131.0242	0.2923	5.5293	6.2269	11.7561	2.0036	5.9018	7.9054	0.0000	28,049.1184	28,049.1184	6.4969	0.0000	28,211.5402
2023	2.3036	19.5873	22.8548	0.0427	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,070.3120	4,070.3120	0.8566	0.0000	4,091.7276
Maximum	**17.5646**	**138.0282**	**131.0242**	**0.2923**	**16.1326**	**6.2269**	**21.0629**	**8.6726**	**5.9018**	**13.2538**	**0.0000**	**28,049.1184**	**28,049.1184**	**6.4969**	**0.0000**	**28,211.5402**

	ROG	NOx	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**	**54.06**	**0.00**	**43.08**	**55.63**	**0.00**	**37.81**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Stationary	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	**2.6796**	**9.0796**	**6.5821**	**0.0687**	**3.1183**	**0.0482**	**3.1665**	**0.8800**	**0.0460**	**0.9260**		**7,210.3419**	**7,210.3419**	**0.2280**	**0.0000**	**7,216.0420**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Stationary	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	**2.6796**	**9.0796**	**6.5821**	**0.0687**	**3.1183**	**0.0482**	**3.1665**	**0.8800**	**0.0460**	**0.9260**		**7,210.3419**	**7,210.3419**	**0.2280**	**0.0000**	**7,216.0420**

	ROG	NOx	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

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Summer

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29

Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20
Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	16	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612		3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**18.0663**	**1.8057**	**19.8719**	**9.9307**	**1.6612**	**11.5919**		**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5500e-003	0.0530	0.0117	1.6000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		17.0440	17.0440	1.2000e-003		17.0741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0350**	**0.0749**	**0.3121**	**1.0500e-003**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**105.5959**	**105.5959**	**3.5900e-003**		**105.6856**

3.2 Well Sites - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612	0.0000	3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**7.7233**	**1.8057**	**9.5290**	**4.2454**	**1.6612**	**5.9066**	**0.0000**	**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5500e-003	0.0530	0.0117	1.6000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		17.0440	17.0440	1.2000e-003		17.0741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0350**	**0.0749**	**0.3121**	**1.0500e-003**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**105.5959**	**105.5959**	**3.5900e-003**		**105.6856**

3.3 Treatment Plants - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056		3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**18.0663**	**1.8539**	**19.9202**	**9.9307**	**1.7056**	**11.6363**		**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0335**	**0.0218**	**0.3004**	**8.9000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**88.5519**	**88.5519**	**2.3900e-003**		**88.6115**

3.3 Treatment Plants - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056	0.0000	3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**7.7233**	**1.8539**	**9.5773**	**4.2454**	**1.7056**	**5.9510**	**0.0000**	**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0335**	**0.0218**	**0.3004**	**8.9000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**88.5519**	**88.5519**	**2.3900e-003**		**88.6115**

3.4 Pipeline - Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058		4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**		**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0490	1.6723	0.3694	4.9500e-003	0.1682	5.2100e-003	0.1734	0.0445	4.9900e-003	0.0495		537.4168	537.4168	0.0379		538.3636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1256	0.0819	1.1264	3.3300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		332.0695	332.0695	8.9500e-003		332.2932
Total	**0.1746**	**1.7541**	**1.4958**	**8.2800e-003**	**0.5035**	**7.6900e-003**	**0.5112**	**0.1334**	**7.2800e-003**	**0.1407**		**869.4863**	**869.4863**	**0.0468**		**870.6569**

3.4 Pipeline - Trenching - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058	0.0000	4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**	**0.0000**	**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0490	1.6723	0.3694	4.9500e-003	0.1682	5.2100e-003	0.1734	0.0445	4.9900e-003	0.0495		537.4168	537.4168	0.0379		538.3636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1256	0.0819	1.1264	3.3300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		332.0695	332.0695	8.9500e-003		332.2932
Total	**0.1746**	**1.7541**	**1.4958**	**8.2800e-003**	**0.5035**	**7.6900e-003**	**0.5112**	**0.1334**	**7.2800e-003**	**0.1407**		**869.4863**	**869.4863**	**0.0468**		**870.6569**

3.4 Pipeline - Trenching - 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	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115		4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**		**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	1.5479	0.3655	4.8800e-003	0.2435	4.5100e-003	0.2480	0.0630	4.3100e-003	0.0673		531.0137	531.0137	0.0373		531.9454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1178	0.0740	1.0417	3.2100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		320.1789	320.1789	8.0900e-003		320.3812
Total	**0.1644**	**1.6219**	**1.4071**	**8.0900e-003**	**0.5789**	**6.9200e-003**	**0.5858**	**0.1519**	**6.5300e-003**	**0.1585**		**851.1927**	**851.1927**	**0.0454**		**852.3266**

3.4 Pipeline - Trenching - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115	0.0000	4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**	**0.0000**	**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	1.5479	0.3655	4.8800e-003	0.2435	4.5100e-003	0.2480	0.0630	4.3100e-003	0.0673		531.0137	531.0137	0.0373		531.9454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1178	0.0740	1.0417	3.2100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		320.1789	320.1789	8.0900e-003		320.3812
Total	**0.1644**	**1.6219**	**1.4071**	**8.0900e-003**	**0.5789**	**6.9200e-003**	**0.5858**	**0.1519**	**6.5300e-003**	**0.1585**		**851.1927**	**851.1927**	**0.0454**		**852.3266**

3.5 Treatment Plants - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676		6,702.9229	6,702.9229	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**8.6733**	**2.0291**	**10.7024**	**3.5965**	**1.8676**	**5.4641**		**6,702.9229**	**6,702.9229**	**2.1595**		**6,756.9114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0655	2.2352	0.4937	6.6100e-003	0.1506	6.9700e-003	0.1575	0.0413	6.6700e-003	0.0479		718.3307	718.3307	0.0506		719.5963
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0419	0.0273	0.3755	1.1100e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.6898	110.6898	2.9800e-003		110.7644
Total	**0.1074**	**2.2625**	**0.8692**	**7.7200e-003**	**0.2624**	**7.8000e-003**	**0.2701**	**0.0709**	**7.4300e-003**	**0.0783**		**829.0205**	**829.0205**	**0.0536**		**830.3607**

3.5 Treatment Plants - Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676	0.0000	6,702.9228	6,702.9228	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**3.7079**	**2.0291**	**5.7369**	**1.5375**	**1.8676**	**3.4051**	**0.0000**	**6,702.9228**	**6,702.9228**	**2.1595**		**6,756.9114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0655	2.2352	0.4937	6.6100e-003	0.1506	6.9700e-003	0.1575	0.0413	6.6700e-003	0.0479		718.3307	718.3307	0.0506		719.5963
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0419	0.0273	0.3755	1.1100e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.6898	110.6898	2.9800e-003		110.7644
Total	**0.1074**	**2.2625**	**0.8692**	**7.7200e-003**	**0.2624**	**7.8000e-003**	**0.2701**	**0.0709**	**7.4300e-003**	**0.0783**		**829.0205**	**829.0205**	**0.0536**		**830.3607**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754		4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**		**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.8100e-003	0.0958	0.0233	2.5000e-004	6.4000e-003	2.0000e-004	6.5900e-003	1.8400e-003	1.9000e-004	2.0300e-003		27.0744	27.0744	1.6700e-003		27.1162
Worker	0.0628	0.0410	0.5632	1.6700e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		166.0347	166.0347	4.4800e-003		166.1466
Total	**0.0656**	**0.1367**	**0.5865**	**1.9200e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**193.1091**	**193.1091**	**6.1500e-003**		**193.2629**

3.6 Treatment Plants - Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754	0.0000	4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**	**0.0000**	**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.8100e-003	0.0958	0.0233	2.5000e-004	6.4000e-003	2.0000e-004	6.5900e-003	1.8400e-003	1.9000e-004	2.0300e-003		27.0744	27.0744	1.6700e-003		27.1162
Worker	0.0628	0.0410	0.5632	1.6700e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		166.0347	166.0347	4.4800e-003		166.1466
Total	**0.0656**	**0.1367**	**0.5865**	**1.9200e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**193.1091**	**193.1091**	**6.1500e-003**		**193.2629**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656		4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**		**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.6400e-003	0.0910	0.0220	2.5000e-004	6.4000e-003	1.7000e-004	6.5700e-003	1.8400e-003	1.6000e-004	2.0000e-003		26.8370	26.8370	1.6200e-003		26.8774
Worker	0.0589	0.0370	0.5208	1.6100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		160.0895	160.0895	4.0500e-003		160.1906
Total	**0.0615**	**0.1280**	**0.5429**	**1.8600e-003**	**0.1741**	**1.3800e-003**	**0.1754**	**0.0463**	**1.2700e-003**	**0.0476**		**186.9265**	**186.9265**	**5.6700e-003**		**187.0681**

3.6 Treatment Plants - Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656	0.0000	4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**	**0.0000**	**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.6400e-003	0.0910	0.0220	2.5000e-004	6.4000e-003	1.7000e-004	6.5700e-003	1.8400e-003	1.6000e-004	2.0000e-003		26.8370	26.8370	1.6200e-003		26.8774
Worker	0.0589	0.0370	0.5208	1.6100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		160.0895	160.0895	4.0500e-003		160.1906
Total	**0.0615**	**0.1280**	**0.5429**	**1.8600e-003**	**0.1741**	**1.3800e-003**	**0.1754**	**0.0463**	**1.2700e-003**	**0.0476**		**186.9265**	**186.9265**	**5.6700e-003**		**187.0681**

3.7 Treatment Plants - Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087		1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**		**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0109	0.1502	4.4000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		44.2759	44.2759	1.1900e-003		44.3058
Total	**0.0167**	**0.0109**	**0.1502**	**4.4000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**44.2759**	**44.2759**	**1.1900e-003**		**44.3058**

3.7 Treatment Plants - Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087	0.0000	1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**	**0.0000**	**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0109	0.1502	4.4000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		44.2759	44.2759	1.1900e-003		44.3058
Total	**0.0167**	**0.0109**	**0.1502**	**4.4000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**44.2759**	**44.2759**	**1.1900e-003**		**44.3058**

3.7 Treatment Plants - 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	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590		1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**		**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0157	9.8600e-003	0.1389	4.3000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		42.6905	42.6905	1.0800e-003		42.7175
Total	**0.0157**	**9.8600e-003**	**0.1389**	**4.3000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**42.6905**	**42.6905**	**1.0800e-003**		**42.7175**

3.7 Treatment Plants - Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590	0.0000	1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**	**0.0000**	**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0157	9.8600e-003	0.1389	4.3000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		42.6905	42.6905	1.0800e-003		42.7175
Total	**0.0157**	**9.8600e-003**	**0.1389**	**4.3000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**42.6905**	**42.6905**	**1.0800e-003**		**42.7175**

3.8 Well Sites - Well Drilling - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555		16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**8.6733**	**3.6630**	**12.3363**	**3.5965**	**3.4555**	**7.0520**		**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.4800e-003	0.2486	0.0587	7.8000e-004	0.0729	7.2000e-004	0.0736	0.0184	6.9000e-004	0.0191		85.2741	85.2741	5.9800e-003		85.4237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.0469	0.6597	2.0300e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		202.7800	202.7800	5.1200e-003		202.9081
Total	**0.0821**	**0.2954**	**0.7184**	**2.8100e-003**	**1.0238**	**2.2500e-003**	**1.0260**	**0.2560**	**2.1000e-003**	**0.2581**		**288.0541**	**288.0541**	**0.0111**		**288.3318**

3.8 Well Sites - Well Drilling - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555	0.0000	16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**3.7079**	**3.6630**	**7.3708**	**1.5375**	**3.4555**	**4.9930**	**0.0000**	**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.4800e-003	0.2486	0.0587	7.8000e-004	0.0729	7.2000e-004	0.0736	0.0184	6.9000e-004	0.0191		85.2741	85.2741	5.9800e-003		85.4237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.0469	0.6597	2.0300e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		202.7800	202.7800	5.1200e-003		202.9081
Total	**0.0821**	**0.2954**	**0.7184**	**2.8100e-003**	**1.0238**	**2.2500e-003**	**1.0260**	**0.2560**	**2.1000e-003**	**0.2581**		**288.0541**	**288.0541**	**0.0111**		**288.3318**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268		3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**		**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2300e-003	0.0408	9.6200e-003	1.3000e-004	3.7000e-003	1.2000e-004	3.8100e-003	9.9000e-004	1.1000e-004	1.1100e-003		13.9812	13.9812	9.8000e-004		14.0057
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0432	0.0271	0.3819	1.1800e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		117.3990	117.3990	2.9700e-003		117.4731
Total	**0.0444**	**0.0679**	**0.3916**	**1.3100e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.2000e-004**	**0.0345**		**131.3801**	**131.3801**	**3.9500e-003**		**131.4788**

3.9 Well Sites - Pump installation/construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268	0.0000	3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**	**0.0000**	**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2300e-003	0.0408	9.6200e-003	1.3000e-004	3.7000e-003	1.2000e-004	3.8100e-003	9.9000e-004	1.1000e-004	1.1100e-003		13.9812	13.9812	9.8000e-004		14.0057
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0432	0.0271	0.3819	1.1800e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		117.3990	117.3990	2.9700e-003		117.4731
Total	**0.0444**	**0.0679**	**0.3916**	**1.3100e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.2000e-004**	**0.0345**		**131.3801**	**131.3801**	**3.9500e-003**		**131.4788**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897		3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**		**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0263	8.7800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5500e-003		13.4078	13.4078	9.1000e-004		13.4306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0406	0.0246	0.3527	1.1300e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		113.0261	113.0261	2.6800e-003		113.0930
Total	**0.0414**	**0.0508**	**0.3615**	**1.2500e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**126.4339**	**126.4339**	**3.5900e-003**		**126.5236**

3.9 Well Sites - Pump installation/construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897	0.0000	3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**	**0.0000**	**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0263	8.7800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5500e-003		13.4078	13.4078	9.1000e-004		13.4306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0406	0.0246	0.3527	1.1300e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		113.0261	113.0261	2.6800e-003		113.0930
Total	**0.0414**	**0.0508**	**0.3615**	**1.2500e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**126.4339**	**126.4339**	**3.5900e-003**		**126.5236**

3.10 Treatment Plants - 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	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039		2,897.6693	2,897.6693	0.9261		2,920.8211
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**		**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8211**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0196	0.0123	0.1736	5.4000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		53.3632	53.3632	1.3500e-003		53.3969
Total	**0.0196**	**0.0123**	**0.1736**	**5.4000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**53.3632**	**53.3632**	**1.3500e-003**		**53.3969**

3.10 Treatment Plants - Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039	0.0000	2,897.6693	2,897.6693	0.9261		2,920.8210
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**	**0.0000**	**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0196	0.0123	0.1736	5.4000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		53.3632	53.3632	1.3500e-003		53.3969
Total	**0.0196**	**0.0123**	**0.1736**	**5.4000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**53.3632**	**53.3632**	**1.3500e-003**		**53.3969**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Unmitigated	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Unmitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	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**

11.0 Vegetation

Cactus Corridor Model Run without Tier 4 Engines

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Winter

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Winter

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	370.00	288.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	35.00	29.00

tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20

tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	115.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00
tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00
tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00

tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00
tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8550	115.0584	75.8079	0.1685	36.8185	5.1128	41.7488	20.0432	4.7502	24.6245	0.0000	16,372.5929	16,372.5929	4.3352	0.0000	16,480.9737
2022	17.5941	138.0648	130.8258	0.2918	10.4947	6.2269	16.7217	4.0626	5.9019	9.9644	0.0000	27,992.6382	27,992.6382	6.4974	0.0000	28,155.0721
2023	2.3080	19.5898	22.8206	0.0426	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,063.0615	4,063.0615	0.8565	0.0000	4,084.4733
Maximum	**17.5941**	**138.0648**	**130.8258**	**0.2918**	**36.8185**	**6.2269**	**41.7488**	**20.0432**	**5.9019**	**24.6245**	**0.0000**	**27,992.6382**	**27,992.6382**	**6.4974**	**0.0000**	**28,155.0721**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8550	115.0584	75.8079	0.1685	16.1326	5.1128	21.0630	8.6726	4.7502	13.2539	0.0000	16,372.5929	16,372.5929	4.3352	0.0000	16,480.9737
2022	17.5941	138.0648	130.8258	0.2918	5.5293	6.2269	11.7562	2.0036	5.9019	7.9054	0.0000	27,992.6382	27,992.6382	6.4974	0.0000	28,155.0721
2023	2.3080	19.5898	22.8206	0.0426	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,063.0615	4,063.0615	0.8565	0.0000	4,084.4733
Maximum	**17.5941**	**138.0648**	**130.8258**	**0.2918**	**16.1326**	**6.2269**	**21.0630**	**8.6726**	**5.9019**	**13.2539**	**0.0000**	**27,992.6382**	**27,992.6382**	**6.4974**	**0.0000**	**28,155.0721**

	ROG	NOx	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**	**54.06**	**0.00**	**43.08**	**55.63**	**0.00**	**37.81**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Stationary	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	**2.6799**	**9.3231**	**6.3950**	**0.0679**	**3.1183**	**0.0484**	**3.1667**	**0.8800**	**0.0462**	**0.9262**		**7,128.3948**	**7,128.3948**	**0.2301**	**0.0000**	**7,134.1466**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Stationary	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	**2.6799**	**9.3231**	**6.3950**	**0.0679**	**3.1183**	**0.0484**	**3.1667**	**0.8800**	**0.0462**	**0.9262**		**7,128.3948**	**7,128.3948**	**0.2301**	**0.0000**	**7,134.1466**

	ROG	NOx	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

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29
Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20

Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	16	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612		3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**18.0663**	**1.8057**	**19.8719**	**9.9307**	**1.6612**	**11.5919**		**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5900e-003	0.0537	0.0125	1.5000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		16.7514	16.7514	1.2500e-003		16.7825
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0385**	**0.0777**	**0.2844**	**9.8000e-004**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**99.8035**	**99.8035**	**3.4800e-003**		**99.8905**

3.2 Well Sites - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612	0.0000	3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**7.7233**	**1.8057**	**9.5290**	**4.2454**	**1.6612**	**5.9066**	**0.0000**	**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5900e-003	0.0537	0.0125	1.5000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		16.7514	16.7514	1.2500e-003		16.7825
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0385**	**0.0777**	**0.2844**	**9.8000e-004**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**99.8035**	**99.8035**	**3.4800e-003**		**99.8905**

3.3 Treatment Plants - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056		3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**18.0663**	**1.8539**	**19.9202**	**9.9307**	**1.7056**	**11.6363**		**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0369**	**0.0240**	**0.2719**	**8.3000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**83.0521**	**83.0521**	**2.2300e-003**		**83.1079**

3.3 Treatment Plants - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056	0.0000	3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**7.7233**	**1.8539**	**9.5773**	**4.2454**	**1.7056**	**5.9510**	**0.0000**	**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0369**	**0.0240**	**0.2719**	**8.3000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**83.0521**	**83.0521**	**2.2300e-003**		**83.1079**

3.4 Pipeline - Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058		4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**		**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0503	1.6929	0.3936	4.8600e-003	0.1682	5.2900e-003	0.1735	0.0445	5.0600e-003	0.0496		528.1894	528.1894	0.0393		529.1717
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1384	0.0899	1.0196	3.1300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		311.4454	311.4454	8.3800e-003		311.6548
Total	**0.1886**	**1.7828**	**1.4132**	**7.9900e-003**	**0.5035**	**7.7700e-003**	**0.5113**	**0.1334**	**7.3500e-003**	**0.1408**		**839.6347**	**839.6347**	**0.0477**		**840.8264**

3.4 Pipeline - Trenching - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058	0.0000	4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**	**0.0000**	**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0503	1.6929	0.3936	4.8600e-003	0.1682	5.2900e-003	0.1735	0.0445	5.0600e-003	0.0496		528.1894	528.1894	0.0393		529.1717
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1384	0.0899	1.0196	3.1300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		311.4454	311.4454	8.3800e-003		311.6548
Total	**0.1886**	**1.7828**	**1.4132**	**7.9900e-003**	**0.5035**	**7.7700e-003**	**0.5113**	**0.1334**	**7.3500e-003**	**0.1408**		**839.6347**	**839.6347**	**0.0477**		**840.8264**

3.4 Pipeline - Trenching - 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	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115		4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**		**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0478	1.5655	0.3885	4.8000e-003	0.2435	4.5800e-003	0.2481	0.0630	4.3800e-003	0.0674		521.8183	521.8183	0.0386		522.7838
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1301	0.0812	0.9412	3.0100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		300.2937	300.2937	7.5700e-003		300.4828
Total	**0.1779**	**1.6467**	**1.3297**	**7.8100e-003**	**0.5789**	**6.9900e-003**	**0.5858**	**0.1519**	**6.6000e-003**	**0.1585**		**822.1120**	**822.1120**	**0.0462**		**823.2666**

3.4 Pipeline - Trenching - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115	0.0000	4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**	**0.0000**	**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0478	1.5655	0.3885	4.8000e-003	0.2435	4.5800e-003	0.2481	0.0630	4.3800e-003	0.0674		521.8183	521.8183	0.0386		522.7838
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1301	0.0812	0.9412	3.0100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		300.2937	300.2937	7.5700e-003		300.4828
Total	**0.1779**	**1.6467**	**1.3297**	**7.8100e-003**	**0.5789**	**6.9900e-003**	**0.5858**	**0.1519**	**6.6000e-003**	**0.1585**		**822.1120**	**822.1120**	**0.0462**		**823.2666**

3.5 Treatment Plants - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676		6,702.9229	6,702.9229	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**8.6733**	**2.0291**	**10.7024**	**3.5965**	**1.8676**	**5.4641**		**6,702.9229**	**6,702.9229**	**2.1595**		**6,756.9114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	2.2627	0.5260	6.5000e-003	0.1506	7.0700e-003	0.1576	0.0413	6.7700e-003	0.0480		705.9970	705.9970	0.0525		707.3100
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3399	1.0400e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.8151	103.8151	2.7900e-003		103.8849
Total	**0.1133**	**2.2927**	**0.8659**	**7.5400e-003**	**0.2624**	**7.9000e-003**	**0.2702**	**0.0709**	**7.5300e-003**	**0.0784**		**809.8121**	**809.8121**	**0.0553**		**811.1949**

3.5 Treatment Plants - Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676	0.0000	6,702.9228	6,702.9228	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**3.7079**	**2.0291**	**5.7369**	**1.5375**	**1.8676**	**3.4051**	**0.0000**	**6,702.9228**	**6,702.9228**	**2.1595**		**6,756.9114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	2.2627	0.5260	6.5000e-003	0.1506	7.0700e-003	0.1576	0.0413	6.7700e-003	0.0480		705.9970	705.9970	0.0525		707.3100
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3399	1.0400e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.8151	103.8151	2.7900e-003		103.8849
Total	**0.1133**	**2.2927**	**0.8659**	**7.5400e-003**	**0.2624**	**7.9000e-003**	**0.2702**	**0.0709**	**7.5300e-003**	**0.0784**		**809.8121**	**809.8121**	**0.0553**		**811.1949**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754		4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**		**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9600e-003	0.0955	0.0259	2.5000e-004	6.4000e-003	2.0000e-004	6.6000e-003	1.8400e-003	1.9000e-004	2.0300e-003		26.3374	26.3374	1.7900e-003		26.3821
Worker	0.0692	0.0450	0.5098	1.5600e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		155.7227	155.7227	4.1900e-003		155.8274
Total	**0.0721**	**0.1405**	**0.5357**	**1.8100e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**182.0601**	**182.0601**	**5.9800e-003**		**182.2095**

3.6 Treatment Plants - Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754	0.0000	4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**	**0.0000**	**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9600e-003	0.0955	0.0259	2.5000e-004	6.4000e-003	2.0000e-004	6.6000e-003	1.8400e-003	1.9000e-004	2.0300e-003		26.3374	26.3374	1.7900e-003		26.3821
Worker	0.0692	0.0450	0.5098	1.5600e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		155.7227	155.7227	4.1900e-003		155.8274
Total	**0.0721**	**0.1405**	**0.5357**	**1.8100e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**182.0601**	**182.0601**	**5.9800e-003**		**182.2095**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656		4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**		**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.7700e-003	0.0907	0.0245	2.4000e-004	6.4000e-003	1.8000e-004	6.5700e-003	1.8400e-003	1.7000e-004	2.0100e-003		26.1022	26.1022	1.7300e-003		26.1454
Worker	0.0651	0.0406	0.4706	1.5100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		150.1468	150.1468	3.7800e-003		150.2414
Total	**0.0678**	**0.1313**	**0.4951**	**1.7500e-003**	**0.1741**	**1.3900e-003**	**0.1754**	**0.0463**	**1.2800e-003**	**0.0476**		**176.2490**	**176.2490**	**5.5100e-003**		**176.3868**

3.6 Treatment Plants - Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656	0.0000	4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**	**0.0000**	**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.7700e-003	0.0907	0.0245	2.4000e-004	6.4000e-003	1.8000e-004	6.5700e-003	1.8400e-003	1.7000e-004	2.0100e-003		26.1022	26.1022	1.7300e-003		26.1454
Worker	0.0651	0.0406	0.4706	1.5100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		150.1468	150.1468	3.7800e-003		150.2414
Total	**0.0678**	**0.1313**	**0.4951**	**1.7500e-003**	**0.1741**	**1.3900e-003**	**0.1754**	**0.0463**	**1.2800e-003**	**0.0476**		**176.2490**	**176.2490**	**5.5100e-003**		**176.3868**

3.7 Treatment Plants - Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087		1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**		**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0185	0.0120	0.1360	4.2000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		41.5261	41.5261	1.1200e-003		41.5540
Total	**0.0185**	**0.0120**	**0.1360**	**4.2000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**41.5261**	**41.5261**	**1.1200e-003**		**41.5540**

3.7 Treatment Plants - Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087	0.0000	1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**	**0.0000**	**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0185	0.0120	0.1360	4.2000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		41.5261	41.5261	1.1200e-003		41.5540
Total	**0.0185**	**0.0120**	**0.1360**	**4.2000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**41.5261**	**41.5261**	**1.1200e-003**		**41.5540**

3.7 Treatment Plants - 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	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590		1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**		**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0174	0.0108	0.1255	4.0000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		40.0392	40.0392	1.0100e-003		40.0644
Total	**0.0174**	**0.0108**	**0.1255**	**4.0000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**40.0392**	**40.0392**	**1.0100e-003**		**40.0644**

3.7 Treatment Plants - Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590	0.0000	1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**	**0.0000**	**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0174	0.0108	0.1255	4.0000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		40.0392	40.0392	1.0100e-003		40.0644
Total	**0.0174**	**0.0108**	**0.1255**	**4.0000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**40.0392**	**40.0392**	**1.0100e-003**		**40.0644**

3.8 Well Sites - Well Drilling - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555		16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**8.6733**	**3.6630**	**12.3363**	**3.5965**	**3.4555**	**7.0520**		**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6800e-003	0.2514	0.0624	7.7000e-004	0.0729	7.3000e-004	0.0736	0.0184	7.0000e-004	0.0191		83.7974	83.7974	6.2000e-003		83.9524
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0824	0.0514	0.5961	1.9100e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		190.1860	190.1860	4.7900e-003		190.3058
Total	**0.0901**	**0.3028**	**0.6585**	**2.6800e-003**	**1.0238**	**2.2600e-003**	**1.0260**	**0.2560**	**2.1100e-003**	**0.2581**		**273.9834**	**273.9834**	**0.0110**		**274.2582**

3.8 Well Sites - Well Drilling - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555	0.0000	16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**3.7079**	**3.6630**	**7.3708**	**1.5375**	**3.4555**	**4.9930**	**0.0000**	**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6800e-003	0.2514	0.0624	7.7000e-004	0.0729	7.3000e-004	0.0736	0.0184	7.0000e-004	0.0191		83.7974	83.7974	6.2000e-003		83.9524
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0824	0.0514	0.5961	1.9100e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		190.1860	190.1860	4.7900e-003		190.3058
Total	**0.0901**	**0.3028**	**0.6585**	**2.6800e-003**	**1.0238**	**2.2600e-003**	**1.0260**	**0.2560**	**2.1100e-003**	**0.2581**		**273.9834**	**273.9834**	**0.0110**		**274.2582**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268		3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**		**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2600e-003	0.0412	0.0102	1.3000e-004	3.7000e-003	1.2000e-004	3.8200e-003	9.9000e-004	1.2000e-004	1.1100e-003		13.7391	13.7391	1.0200e-003		13.7645
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0298	0.3451	1.1000e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		110.1077	110.1077	2.7700e-003		110.1770
Total	**0.0490**	**0.0710**	**0.3553**	**1.2300e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.3000e-004**	**0.0345**		**123.8467**	**123.8467**	**3.7900e-003**		**123.9415**

3.9 Well Sites - Pump installation/construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268	0.0000	3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**	**0.0000**	**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2600e-003	0.0412	0.0102	1.3000e-004	3.7000e-003	1.2000e-004	3.8200e-003	9.9000e-004	1.2000e-004	1.1100e-003		13.7391	13.7391	1.0200e-003		13.7645
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0298	0.3451	1.1000e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		110.1077	110.1077	2.7700e-003		110.1770
Total	**0.0490**	**0.0710**	**0.3553**	**1.2300e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.3000e-004**	**0.0345**		**123.8467**	**123.8467**	**3.7900e-003**		**123.9415**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897		3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**		**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-004	0.0264	9.1800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5600e-003		13.1772	13.1772	9.4000e-004		13.2007
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0450	0.0269	0.3181	1.0600e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		106.0062	106.0062	2.5000e-003		106.0687
Total	**0.0458**	**0.0534**	**0.3273**	**1.1800e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**119.1833**	**119.1833**	**3.4400e-003**		**119.2693**

3.9 Well Sites - Pump installation/construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897	0.0000	3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**	**0.0000**	**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-004	0.0264	9.1800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5600e-003		13.1772	13.1772	9.4000e-004		13.2007
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0450	0.0269	0.3181	1.0600e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		106.0062	106.0062	2.5000e-003		106.0687
Total	**0.0458**	**0.0534**	**0.3273**	**1.1800e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**119.1833**	**119.1833**	**3.4400e-003**		**119.2693**

3.10 Treatment Plants - 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	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039		2,897.6693	2,897.6693	0.9261		2,920.8211
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**		**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8211**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0135	0.1569	5.0000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		50.0489	50.0489	1.2600e-003		50.0805
Total	**0.0217**	**0.0135**	**0.1569**	**5.0000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**50.0489**	**50.0489**	**1.2600e-003**		**50.0805**

3.10 Treatment Plants - Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039	0.0000	2,897.6693	2,897.6693	0.9261		2,920.8210
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**	**0.0000**	**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0135	0.1569	5.0000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		50.0489	50.0489	1.2600e-003		50.0805
Total	**0.0217**	**0.0135**	**0.1569**	**5.0000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**50.0489**	**50.0489**	**1.2600e-003**		**50.0805**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Unmitigated	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Unmitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	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**

11.0 Vegetation

Cactus Corridor Model Run without Tier 4 Engines

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Annual

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	35.00	29.00
tblConstructionPhase	NumDays	370.00	288.00

tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20

tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Treatment Plants - Building Construction
tblOffRoadEquipment	PhaseName		Treatment Plants - Building Construction
tblOffRoadEquipment	PhaseName		Treatment Plants - Building Construction
tblOffRoadEquipment	PhaseName		Treatment Plants - Building Construction
tblOffRoadEquipment	PhaseName		Treatment Plants - Building Construction
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00
tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00

tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00

tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	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					
2021	0.7878	6.7756	4.7480	0.0100	1.6586	0.3252	1.9838	0.8801	0.3041	1.1842	0.0000	877.1288	877.1288	0.2140	0.0000	882.4778
2022	1.4568	10.1959	10.3097	0.0214	0.4698	0.4836	0.9534	0.1783	0.4590	0.6374	0.0000	1,858.0485	1,858.0485	0.4164	0.0000	1,868.4581
2023	0.0749	0.6367	0.7420	1.3900e-003	4.2400e-003	0.0305	0.0347	1.1200e-003	0.0289	0.0301	0.0000	119.8465	119.8465	0.0253	0.0000	120.4778
Maximum	**1.4568**	**10.1959**	**10.3097**	**0.0214**	**1.6586**	**0.4836**	**1.9838**	**0.8801**	**0.4590**	**1.1842**	**0.0000**	**1,858.0485**	**1,858.0485**	**0.4164**	**0.0000**	**1,868.4581**

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	0.7878	6.7756	4.7480	0.0100	0.7385	0.3252	1.0637	0.3841	0.3041	0.6882	0.0000	877.1278	877.1278	0.2140	0.0000	882.4768
2022	1.4568	10.1958	10.3097	0.0214	0.2612	0.4836	0.7448	0.0919	0.4590	0.5509	0.0000	1,858.0464	1,858.0464	0.4164	0.0000	1,868.4559
2023	0.0749	0.6367	0.7420	1.3900e-003	4.2400e-003	0.0305	0.0347	1.1200e-003	0.0289	0.0301	0.0000	119.8463	119.8463	0.0253	0.0000	120.4776
Maximum	**1.4568**	**10.1958**	**10.3097**	**0.0214**	**0.7385**	**0.4836**	**1.0637**	**0.3841**	**0.4590**	**0.6882**	**0.0000**	**1,858.0464**	**1,858.0464**	**0.4164**	**0.0000**	**1,868.4559**

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, 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	**0.00**	**0.00**	**0.00**	**0.00**	**52.92**	**0.00**	**37.98**	**54.98**	**0.00**	**31.46**	**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**	3.8660	3.8660
2	**10-1-2021**	**12-31-2021**	3.6238	3.6238
3	**1-1-2022**	**3-31-2022**	5.9676	5.9676
4	**4-1-2022**	**6-30-2022**	2.2167	2.2167
5	**7-1-2022**	**9-30-2022**	1.9409	1.9409
6	**10-1-2022**	**12-31-2022**	1.5372	1.5372
7	**1-1-2023**	**3-31-2023**	0.7039	0.7039
		Highest	5.9676	5.9676

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Mobile	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Stationary	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4745**	**1.2691**	**0.8825**	**8.9300e-003**	**0.3988**	**8.2700e-003**	**0.4071**	**0.1128**	**7.9700e-003**	**0.1208**	**0.0000**	**2,264.0445**	**2,264.0445**	**0.1155**	**0.0182**	**2,272.3441**

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Mobile	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Stationary	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4745**	**1.2691**	**0.8825**	**8.9300e-003**	**0.3988**	**8.2700e-003**	**0.4071**	**0.1128**	**7.9700e-003**	**0.1208**	**0.0000**	**2,264.0445**	**2,264.0445**	**0.1155**	**0.0182**	**2,272.3441**

	ROG	NOx	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

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Cactus Corridor Model Run without Tier 4 Engines - South Coast Air Basin, Annual

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29

Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20
Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	14	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1924	0.0000	1.1924	0.6554	0.0000	0.6554	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2395	2.4711	1.0676	2.3300e-003		0.1192	0.1192		0.1096	0.1096	0.0000	204.9026	204.9026	0.0663	0.0000	206.5593
Total	**0.2395**	**2.4711**	**1.0676**	**2.3300e-003**	**1.1924**	**0.1192**	**1.3115**	**0.6554**	**0.1096**	**0.7651**	**0.0000**	**204.9026**	**204.9026**	**0.0663**	**0.0000**	**206.5593**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	3.6100e-003	8.0000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0131	1.0131	7.0000e-005	0.0000	1.0150
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	2.1900e-003	1.6300e-003	0.0184	6.0000e-005	5.7900e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0511	5.0511	1.4000e-004	0.0000	5.0545
Total	**2.2900e-003**	**5.2400e-003**	**0.0192**	**7.0000e-005**	**6.0200e-003**	**5.0000e-005**	**6.0800e-003**	**1.6000e-003**	**5.0000e-005**	**1.6500e-003**	**0.0000**	**6.0643**	**6.0643**	**2.1000e-004**	**0.0000**	**6.0695**

3.2 Well Sites - Site Prep - 2021

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					0.5097	0.0000	0.5097	0.2802	0.0000	0.2802	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2395	2.4711	1.0676	2.3300e-003		0.1192	0.1192		0.1096	0.1096	0.0000	204.9023	204.9023	0.0663	0.0000	206.5591
Total	**0.2395**	**2.4711**	**1.0676**	**2.3300e-003**	**0.5097**	**0.1192**	**0.6289**	**0.2802**	**0.1096**	**0.3898**	**0.0000**	**204.9023**	**204.9023**	**0.0663**	**0.0000**	**206.5591**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	3.6100e-003	8.0000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0131	1.0131	7.0000e-005	0.0000	1.0150
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	2.1900e-003	1.6300e-003	0.0184	6.0000e-005	5.7900e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0511	5.0511	1.4000e-004	0.0000	5.0545
Total	**2.2900e-003**	**5.2400e-003**	**0.0192**	**7.0000e-005**	**6.0200e-003**	**5.0000e-005**	**6.0800e-003**	**1.6000e-003**	**5.0000e-005**	**1.6500e-003**	**0.0000**	**6.0643**	**6.0643**	**2.1000e-004**	**0.0000**	**6.0695**

3.3 Treatment Plants - Site Prep - 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					0.2891	0.0000	0.2891	0.1589	0.0000	0.1589	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0605	0.6201	0.2732	6.2000e-004		0.0297	0.0297		0.0273	0.0273	0.0000	54.3128	54.3128	0.0176	0.0000	54.7519
Total	**0.0605**	**0.6201**	**0.2732**	**6.2000e-004**	**0.2891**	**0.0297**	**0.3187**	**0.1589**	**0.0273**	**0.1862**	**0.0000**	**54.3128**	**54.3128**	**0.0176**	**0.0000**	**54.7519**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.9000e-004	4.4700e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2245	1.2245	3.0000e-005	0.0000	1.2253
Total	**5.3000e-004**	**3.9000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2245**	**1.2245**	**3.0000e-005**	**0.0000**	**1.2253**

3.3 Treatment Plants - Site Prep - 2021

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					0.1236	0.0000	0.1236	0.0679	0.0000	0.0679	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0605	0.6201	0.2732	6.2000e-004		0.0297	0.0297		0.0273	0.0273	0.0000	54.3127	54.3127	0.0176	0.0000	54.7519
Total	**0.0605**	**0.6201**	**0.2732**	**6.2000e-004**	**0.1236**	**0.0297**	**0.1532**	**0.0679**	**0.0273**	**0.0952**	**0.0000**	**54.3127**	**54.3127**	**0.0176**	**0.0000**	**54.7519**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.9000e-004	4.4700e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2245	1.2245	3.0000e-005	0.0000	1.2253
Total	**5.3000e-004**	**3.9000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2245**	**1.2245**	**3.0000e-005**	**0.0000**	**1.2253**

3.4 Pipeline - Trenching - 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	0.1893	1.6326	1.6492	3.1200e-003		0.0833	0.0833		0.0796	0.0796	0.0000	269.3262	269.3262	0.0576	0.0000	270.7668
Total	**0.1893**	**1.6326**	**1.6492**	**3.1200e-003**		**0.0833**	**0.0833**		**0.0796**	**0.0796**	**0.0000**	**269.3262**	**269.3262**	**0.0576**	**0.0000**	**270.7668**

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	3.2700e-003	0.1139	0.0251	3.2000e-004	0.0109	3.5000e-004	0.0113	2.8900e-003	3.3000e-004	3.2200e-003	0.0000	31.9454	31.9454	2.3000e-003	0.0000	32.0030
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	8.2300e-003	6.1100e-003	0.0691	2.1000e-004	0.0217	1.6000e-004	0.0219	5.7700e-003	1.5000e-004	5.9200e-003	0.0000	18.9417	18.9417	5.1000e-004	0.0000	18.9545
Total	**0.0115**	**0.1200**	**0.0942**	**5.3000e-004**	**0.0326**	**5.1000e-004**	**0.0331**	**8.6600e-003**	**4.8000e-004**	**9.1400e-003**	**0.0000**	**50.8871**	**50.8871**	**2.8100e-003**	**0.0000**	**50.9574**

3.4 Pipeline - Trenching - 2021

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	0.1893	1.6326	1.6492	3.1200e-003		0.0833	0.0833		0.0796	0.0796	0.0000	269.3259	269.3259	0.0576	0.0000	270.7665
Total	**0.1893**	**1.6326**	**1.6492**	**3.1200e-003**		**0.0833**	**0.0833**		**0.0796**	**0.0796**	**0.0000**	**269.3259**	**269.3259**	**0.0576**	**0.0000**	**270.7665**

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	3.2700e-003	0.1139	0.0251	3.2000e-004	0.0109	3.5000e-004	0.0113	2.8900e-003	3.3000e-004	3.2200e-003	0.0000	31.9454	31.9454	2.3000e-003	0.0000	32.0030
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	8.2300e-003	6.1100e-003	0.0691	2.1000e-004	0.0217	1.6000e-004	0.0219	5.7700e-003	1.5000e-004	5.9200e-003	0.0000	18.9417	18.9417	5.1000e-004	0.0000	18.9545
Total	**0.0115**	**0.1200**	**0.0942**	**5.3000e-004**	**0.0326**	**5.1000e-004**	**0.0331**	**8.6600e-003**	**4.8000e-004**	**9.1400e-003**	**0.0000**	**50.8871**	**50.8871**	**2.8100e-003**	**0.0000**	**50.9574**

3.4 Pipeline - Trenching - 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	0.1111	0.9289	1.0591	2.0400e-003		0.0454	0.0454		0.0435	0.0435	0.0000	175.5058	175.5058	0.0373	0.0000	176.4374
Total	**0.1111**	**0.9289**	**1.0591**	**2.0400e-003**		**0.0454**	**0.0454**		**0.0435**	**0.0435**	**0.0000**	**175.5058**	**175.5058**	**0.0373**	**0.0000**	**176.4374**

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	2.0300e-003	0.0686	0.0162	2.1000e-004	0.0103	2.0000e-004	0.0105	2.6600e-003	1.9000e-004	2.8500e-003	0.0000	20.5636	20.5636	1.4800e-003	0.0000	20.6006
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.5900e-003	0.0416	1.3000e-004	0.0142	1.0000e-004	0.0143	3.7600e-003	1.0000e-004	3.8500e-003	0.0000	11.8988	11.8988	3.0000e-004	0.0000	11.9063
Total	**7.0700e-003**	**0.0722**	**0.0577**	**3.4000e-004**	**0.0244**	**3.0000e-004**	**0.0247**	**6.4200e-003**	**2.9000e-004**	**6.7000e-003**	**0.0000**	**32.4624**	**32.4624**	**1.7800e-003**	**0.0000**	**32.5068**

3.4 Pipeline - Trenching - 2022

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	0.1111	0.9288	1.0591	2.0400e-003		0.0454	0.0454		0.0435	0.0435	0.0000	175.5056	175.5056	0.0373	0.0000	176.4372
Total	**0.1111**	**0.9288**	**1.0591**	**2.0400e-003**		**0.0454**	**0.0454**		**0.0435**	**0.0435**	**0.0000**	**175.5056**	**175.5056**	**0.0373**	**0.0000**	**176.4372**

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	2.0300e-003	0.0686	0.0162	2.1000e-004	0.0103	2.0000e-004	0.0105	2.6600e-003	1.9000e-004	2.8500e-003	0.0000	20.5636	20.5636	1.4800e-003	0.0000	20.6006
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.5900e-003	0.0416	1.3000e-004	0.0142	1.0000e-004	0.0143	3.7600e-003	1.0000e-004	3.8500e-003	0.0000	11.8988	11.8988	3.0000e-004	0.0000	11.9063
Total	**7.0700e-003**	**0.0722**	**0.0577**	**3.4000e-004**	**0.0244**	**3.0000e-004**	**0.0247**	**6.4200e-003**	**2.9000e-004**	**6.7000e-003**	**0.0000**	**32.4624**	**32.4624**	**1.7800e-003**	**0.0000**	**32.5068**

3.5 Treatment Plants - 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					0.1258	0.0000	0.1258	0.0522	0.0000	0.0522	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0653	0.7066	0.4575	1.0100e-003		0.0294	0.0294		0.0271	0.0271	0.0000	88.1715	88.1715	0.0284	0.0000	88.8816
Total	**0.0653**	**0.7066**	**0.4575**	**1.0100e-003**	**0.1258**	**0.0294**	**0.1552**	**0.0522**	**0.0271**	**0.0792**	**0.0000**	**88.1715**	**88.1715**	**0.0284**	**0.0000**	**88.8816**

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	0.0334	7.3600e-003	1.0000e-004	2.1500e-003	1.0000e-004	2.2500e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	9.3809	9.3809	6.8000e-004	0.0000	9.3978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	5.0600e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3872	1.3872	4.0000e-005	0.0000	1.3881
Total	**1.5600e-003**	**0.0339**	**0.0124**	**1.2000e-004**	**3.7400e-003**	**1.1000e-004**	**3.8500e-003**	**1.0100e-003**	**1.1000e-004**	**1.1200e-003**	**0.0000**	**10.7681**	**10.7681**	**7.2000e-004**	**0.0000**	**10.7859**

3.5 Treatment Plants - Grading - 2021

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					0.0538	0.0000	0.0538	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0653	0.7066	0.4575	1.0100e-003		0.0294	0.0294		0.0271	0.0271	0.0000	88.1713	88.1713	0.0284	0.0000	88.8815
Total	**0.0653**	**0.7066**	**0.4575**	**1.0100e-003**	**0.0538**	**0.0294**	**0.0832**	**0.0223**	**0.0271**	**0.0494**	**0.0000**	**88.1713**	**88.1713**	**0.0284**	**0.0000**	**88.8815**

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	0.0334	7.3600e-003	1.0000e-004	2.1500e-003	1.0000e-004	2.2500e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	9.3809	9.3809	6.8000e-004	0.0000	9.3978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	5.0600e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3872	1.3872	4.0000e-005	0.0000	1.3881
Total	**1.5600e-003**	**0.0339**	**0.0124**	**1.2000e-004**	**3.7400e-003**	**1.1000e-004**	**3.8500e-003**	**1.0100e-003**	**1.1000e-004**	**1.1200e-003**	**0.0000**	**10.7681**	**10.7681**	**7.2000e-004**	**0.0000**	**10.7859**

3.6 Treatment Plants - 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	0.1054	0.9483	0.9192	1.6100e-003		0.0517	0.0517		0.0488	0.0488	0.0000	139.4572	139.4572	0.0321	0.0000	140.2583
Total	**0.1054**	**0.9483**	**0.9192**	**1.6100e-003**		**0.0517**	**0.0517**		**0.0488**	**0.0488**	**0.0000**	**139.4572**	**139.4572**	**0.0321**	**0.0000**	**140.2583**

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	1.0000e-004	3.4500e-003	8.7000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8620	0.8620	6.0000e-005	0.0000	0.8634
Worker	2.2100e-003	1.6400e-003	0.0186	6.0000e-005	5.8400e-003	4.0000e-005	5.8900e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.0942	5.0942	1.4000e-004	0.0000	5.0976
Total	**2.3100e-003**	**5.0900e-003**	**0.0195**	**7.0000e-005**	**6.0600e-003**	**5.0000e-005**	**6.1200e-003**	**1.6100e-003**	**5.0000e-005**	**1.6600e-003**	**0.0000**	**5.9561**	**5.9561**	**2.0000e-004**	**0.0000**	**5.9610**

3.6 Treatment Plants - Building Construction - 2021

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	0.1054	0.9483	0.9192	1.6100e-003		0.0517	0.0517		0.0488	0.0488	0.0000	139.4570	139.4570	0.0321	0.0000	140.2582
Total	**0.1054**	**0.9483**	**0.9192**	**1.6100e-003**		**0.0517**	**0.0517**		**0.0488**	**0.0488**	**0.0000**	**139.4570**	**139.4570**	**0.0321**	**0.0000**	**140.2582**

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	1.0000e-004	3.4500e-003	8.7000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8620	0.8620	6.0000e-005	0.0000	0.8634
Worker	2.2100e-003	1.6400e-003	0.0186	6.0000e-005	5.8400e-003	4.0000e-005	5.8900e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.0942	5.0942	1.4000e-004	0.0000	5.0976
Total	**2.3100e-003**	**5.0900e-003**	**0.0195**	**7.0000e-005**	**6.0600e-003**	**5.0000e-005**	**6.1200e-003**	**1.6100e-003**	**5.0000e-005**	**1.6600e-003**	**0.0000**	**5.9561**	**5.9561**	**2.0000e-004**	**0.0000**	**5.9610**

3.6 Treatment Plants - 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	0.2907	2.5779	2.7703	4.9400e-003		0.1337	0.1337		0.1265	0.1265	0.0000	426.3018	426.3018	0.0973	0.0000	428.7350
Total	**0.2907**	**2.5779**	**2.7703**	**4.9400e-003**		**0.1337**	**0.1337**		**0.1265**	**0.1265**	**0.0000**	**426.3018**	**426.3018**	**0.0973**	**0.0000**	**428.7350**

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	2.9000e-004	0.0100	2.5300e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.0000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6112	2.6112	1.6000e-004	0.0000	2.6153
Worker	6.3500e-003	4.5300e-003	0.0525	1.7000e-004	0.0179	1.3000e-004	0.0180	4.7400e-003	1.2000e-004	4.8600e-003	0.0000	15.0118	15.0118	3.8000e-004	0.0000	15.0213
Total	**6.6400e-003**	**0.0145**	**0.0550**	**2.0000e-004**	**0.0185**	**1.5000e-004**	**0.0187**	**4.9400e-003**	**1.4000e-004**	**5.0800e-003**	**0.0000**	**17.6230**	**17.6230**	**5.4000e-004**	**0.0000**	**17.6366**

3.6 Treatment Plants - Building Construction - 2022

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	0.2907	2.5779	2.7703	4.9400e-003		0.1337	0.1337		0.1265	0.1265	0.0000	426.3013	426.3013	0.0973	0.0000	428.7345
Total	**0.2907**	**2.5779**	**2.7703**	**4.9400e-003**		**0.1337**	**0.1337**		**0.1265**	**0.1265**	**0.0000**	**426.3013**	**426.3013**	**0.0973**	**0.0000**	**428.7345**

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	2.9000e-004	0.0100	2.5300e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.0000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6112	2.6112	1.6000e-004	0.0000	2.6153
Worker	6.3500e-003	4.5300e-003	0.0525	1.7000e-004	0.0179	1.3000e-004	0.0180	4.7400e-003	1.2000e-004	4.8600e-003	0.0000	15.0118	15.0118	3.8000e-004	0.0000	15.0213
Total	**6.6400e-003**	**0.0145**	**0.0550**	**2.0000e-004**	**0.0185**	**1.5000e-004**	**0.0187**	**4.9400e-003**	**1.4000e-004**	**5.0800e-003**	**0.0000**	**17.6230**	**17.6230**	**5.4000e-004**	**0.0000**	**17.6366**

3.7 Treatment Plants - Architectural Coating - 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					
Archit. Coating	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0280	0.2319	0.2266	5.2000e-004		0.0112	0.0112		0.0110	0.0110	0.0000	44.7002	44.7002	8.0500e-003	0.0000	44.9014
Total	**0.1091**	**0.2319**	**0.2266**	**5.2000e-004**		**0.0112**	**0.0112**		**0.0110**	**0.0110**	**0.0000**	**44.7002**	**44.7002**	**8.0500e-003**	**0.0000**	**44.9014**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.4000e-004	4.9600e-003	2.0000e-005	1.5600e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3594
Total	**5.9000e-004**	**4.4000e-004**	**4.9600e-003**	**2.0000e-005**	**1.5600e-003**	**1.0000e-005**	**1.5700e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.3585**	**1.3585**	**4.0000e-005**	**0.0000**	**1.3594**

3.7 Treatment Plants - Architectural Coating - 2021

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	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0280	0.2319	0.2266	5.2000e-004		0.0112	0.0112		0.0110	0.0110	0.0000	44.7001	44.7001	8.0500e-003	0.0000	44.9013
Total	**0.1091**	**0.2319**	**0.2266**	**5.2000e-004**		**0.0112**	**0.0112**		**0.0110**	**0.0110**	**0.0000**	**44.7001**	**44.7001**	**8.0500e-003**	**0.0000**	**44.9013**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.4000e-004	4.9600e-003	2.0000e-005	1.5600e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3594
Total	**5.9000e-004**	**4.4000e-004**	**4.9600e-003**	**2.0000e-005**	**1.5600e-003**	**1.0000e-005**	**1.5700e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.3585**	**1.3585**	**4.0000e-005**	**0.0000**	**1.3594**

3.7 Treatment Plants - 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	0.2967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0931	0.7295	0.8125	1.8900e-003		0.0344	0.0344		0.0337	0.0337	0.0000	163.7180	163.7180	0.0292	0.0000	164.4472
Total	**0.3898**	**0.7295**	**0.8125**	**1.8900e-003**		**0.0344**	**0.0344**		**0.0337**	**0.0337**	**0.0000**	**163.7180**	**163.7180**	**0.0292**	**0.0000**	**164.4472**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.4500e-003	0.0168	5.0000e-005	5.7100e-003	4.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5500e-003	0.0000	4.7964	4.7964	1.2000e-004	0.0000	4.7994
Total	**2.0300e-003**	**1.4500e-003**	**0.0168**	**5.0000e-005**	**5.7100e-003**	**4.0000e-005**	**5.7500e-003**	**1.5200e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**4.7964**	**4.7964**	**1.2000e-004**	**0.0000**	**4.7994**

3.7 Treatment Plants - Architectural Coating - 2022

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	0.2967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0931	0.7295	0.8125	1.8900e-003		0.0344	0.0344		0.0337	0.0337	0.0000	163.7178	163.7178	0.0292	0.0000	164.4470
Total	**0.3898**	**0.7295**	**0.8125**	**1.8900e-003**		**0.0344**	**0.0344**		**0.0337**	**0.0337**	**0.0000**	**163.7178**	**163.7178**	**0.0292**	**0.0000**	**164.4470**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.4500e-003	0.0168	5.0000e-005	5.7100e-003	4.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5500e-003	0.0000	4.7964	4.7964	1.2000e-004	0.0000	4.7994
Total	**2.0300e-003**	**1.4500e-003**	**0.0168**	**5.0000e-005**	**5.7100e-003**	**4.0000e-005**	**5.7500e-003**	**1.5200e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**4.7964**	**4.7964**	**1.2000e-004**	**0.0000**	**4.7994**

3.8 Well Sites - Well Drilling - 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					0.3643	0.0000	0.3643	0.1511	0.0000	0.1511	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3771	3.5701	3.0158	7.2200e-003		0.1539	0.1539		0.1451	0.1451	0.0000	627.2268	627.2268	0.1616	0.0000	631.2678
Total	**0.3771**	**3.5701**	**3.0158**	**7.2200e-003**	**0.3643**	**0.1539**	**0.5181**	**0.1511**	**0.1451**	**0.2962**	**0.0000**	**627.2268**	**627.2268**	**0.1616**	**0.0000**	**631.2678**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0108	2.5300e-003	3.0000e-005	3.0000e-003	3.0000e-005	3.0300e-003	7.6000e-004	3.0000e-005	7.9000e-004	0.0000	3.2255	3.2255	2.3000e-004	0.0000	3.2313
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	3.1100e-003	2.2200e-003	0.0257	8.0000e-005	0.0391	6.0000e-005	0.0392	9.7800e-003	6.0000e-005	9.8400e-003	0.0000	7.3607	7.3607	1.9000e-004	0.0000	7.3653
Total	**3.4300e-003**	**0.0130**	**0.0283**	**1.1000e-004**	**0.0421**	**9.0000e-005**	**0.0422**	**0.0105**	**9.0000e-005**	**0.0106**	**0.0000**	**10.5861**	**10.5861**	**4.2000e-004**	**0.0000**	**10.5965**

3.8 Well Sites - Well Drilling - 2022

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					0.1557	0.0000	0.1557	0.0646	0.0000	0.0646	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3771	3.5701	3.0158	7.2200e-003		0.1538	0.1538		0.1451	0.1451	0.0000	627.2261	627.2261	0.1616	0.0000	631.2670
Total	**0.3771**	**3.5701**	**3.0158**	**7.2200e-003**	**0.1557**	**0.1538**	**0.3096**	**0.0646**	**0.1451**	**0.2097**	**0.0000**	**627.2261**	**627.2261**	**0.1616**	**0.0000**	**631.2670**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0108	2.5300e-003	3.0000e-005	3.0000e-003	3.0000e-005	3.0300e-003	7.6000e-004	3.0000e-005	7.9000e-004	0.0000	3.2255	3.2255	2.3000e-004	0.0000	3.2313
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	3.1100e-003	2.2200e-003	0.0257	8.0000e-005	0.0391	6.0000e-005	0.0392	9.7800e-003	6.0000e-005	9.8400e-003	0.0000	7.3607	7.3607	1.9000e-004	0.0000	7.3653
Total	**3.4300e-003**	**0.0130**	**0.0283**	**1.1000e-004**	**0.0421**	**9.0000e-005**	**0.0422**	**0.0105**	**9.0000e-005**	**0.0106**	**0.0000**	**10.5861**	**10.5861**	**4.2000e-004**	**0.0000**	**10.5965**

3.9 Well Sites - Pump installation/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	0.2439	2.1258	2.2655	4.1400e-003		0.1081	0.1081		0.1027	0.1027	0.0000	357.6621	357.6621	0.0781	0.0000	359.6147
Total	**0.2439**	**2.1258**	**2.2655**	**4.1400e-003**		**0.1081**	**0.1081**		**0.1027**	**0.1027**	**0.0000**	**357.6621**	**357.6621**	**0.0781**	**0.0000**	**359.6147**

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	1.2000e-004	4.2000e-003	9.9000e-004	1.0000e-005	3.6000e-004	1.0000e-005	3.8000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.2591	1.2591	9.0000e-005	0.0000	1.2614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2900e-003	3.0700e-003	0.0355	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1463	10.1463	2.6000e-004	0.0000	10.1527
Total	**4.4100e-003**	**7.2700e-003**	**0.0364**	**1.2000e-004**	**0.0124**	**1.0000e-004**	**0.0125**	**3.3100e-003**	**9.0000e-005**	**3.4000e-003**	**0.0000**	**11.4054**	**11.4054**	**3.5000e-004**	**0.0000**	**11.4140**

3.9 Well Sites - Pump installation/construction - 2022

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	0.2439	2.1258	2.2655	4.1400e-003		0.1081	0.1081		0.1027	0.1027	0.0000	357.6617	357.6617	0.0781	0.0000	359.6143
Total	**0.2439**	**2.1258**	**2.2655**	**4.1400e-003**		**0.1081**	**0.1081**		**0.1027**	**0.1027**	**0.0000**	**357.6617**	**357.6617**	**0.0781**	**0.0000**	**359.6143**

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	1.2000e-004	4.2000e-003	9.9000e-004	1.0000e-005	3.6000e-004	1.0000e-005	3.8000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.2591	1.2591	9.0000e-005	0.0000	1.2614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2900e-003	3.0700e-003	0.0355	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1463	10.1463	2.6000e-004	0.0000	10.1527
Total	**4.4100e-003**	**7.2700e-003**	**0.0364**	**1.2000e-004**	**0.0124**	**1.0000e-004**	**0.0125**	**3.3100e-003**	**9.0000e-005**	**3.4000e-003**	**0.0000**	**11.4054**	**11.4054**	**3.5000e-004**	**0.0000**	**11.4140**

3.9 Well Sites - Pump installation/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	0.0735	0.6349	0.7310	1.3500e-003		0.0304	0.0304		0.0289	0.0289	0.0000	116.2794	116.2794	0.0252	0.0000	116.9081
Total	**0.0735**	**0.6349**	**0.7310**	**1.3500e-003**		**0.0304**	**0.0304**		**0.0289**	**0.0289**	**0.0000**	**116.2794**	**116.2794**	**0.0252**	**0.0000**	**116.9081**

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	3.0000e-005	8.7000e-004	2.9000e-004	0.0000	3.1000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3925	0.3925	3.0000e-005	0.0000	0.3931
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	1.3100e-003	9.0000e-004	0.0106	4.0000e-005	3.9200e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.1747	3.1747	7.0000e-005	0.0000	3.1765
Total	**1.3400e-003**	**1.7700e-003**	**0.0109**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2700e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.5671**	**3.5671**	**1.0000e-004**	**0.0000**	**3.5697**

3.9 Well Sites - Pump installation/construction - 2023

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	0.0735	0.6349	0.7310	1.3500e-003		0.0304	0.0304		0.0289	0.0289	0.0000	116.2792	116.2792	0.0252	0.0000	116.9080
Total	**0.0735**	**0.6349**	**0.7310**	**1.3500e-003**		**0.0304**	**0.0304**		**0.0289**	**0.0289**	**0.0000**	**116.2792**	**116.2792**	**0.0252**	**0.0000**	**116.9080**

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	3.0000e-005	8.7000e-004	2.9000e-004	0.0000	3.1000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3925	0.3925	3.0000e-005	0.0000	0.3931
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	1.3100e-003	9.0000e-004	0.0106	4.0000e-005	3.9200e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.1747	3.1747	7.0000e-005	0.0000	3.1765
Total	**1.3400e-003**	**1.7700e-003**	**0.0109**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2700e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.5671**	**3.5671**	**1.0000e-004**	**0.0000**	**3.5697**

3.10 Treatment Plants - 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	0.0164	0.1553	0.1905	3.5000e-004		7.5300e-003	7.5300e-003		6.9500e-003	6.9500e-003	0.0000	30.2303	30.2303	9.6600e-003	0.0000	30.4718
Paving	4.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0204**	**0.1553**	**0.1905**	**3.5000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9500e-003**	**6.9500e-003**	**0.0000**	**30.2303**	**30.2303**	**9.6600e-003**	**0.0000**	**30.4718**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8500e-003	1.0000e-005	2.2700e-003	0.0000	2.2800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.5304	0.5304	1.0000e-005	0.0000	0.5307
Total	**2.2000e-004**	**1.6000e-004**	**1.8500e-003**	**1.0000e-005**	**2.2700e-003**	**0.0000**	**2.2800e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.5304**	**0.5304**	**1.0000e-005**	**0.0000**	**0.5307**

3.10 Treatment Plants - Paving - 2022

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	0.0164	0.1553	0.1905	3.5000e-004		7.5300e-003	7.5300e-003		6.9500e-003	6.9500e-003	0.0000	30.2303	30.2303	9.6600e-003	0.0000	30.4718
Paving	4.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0204**	**0.1553**	**0.1905**	**3.5000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9500e-003**	**6.9500e-003**	**0.0000**	**30.2303**	**30.2303**	**9.6600e-003**	**0.0000**	**30.4718**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8500e-003	1.0000e-005	2.2700e-003	0.0000	2.2800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.5304	0.5304	1.0000e-005	0.0000	0.5307
Total	**2.2000e-004**	**1.6000e-004**	**1.8500e-003**	**1.0000e-005**	**2.2700e-003**	**0.0000**	**2.2800e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.5304**	**0.5304**	**1.0000e-005**	**0.0000**	**0.5307**

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	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Unmitigated	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
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					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 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					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	1.668e+006	353.6160	0.0219	4.5400e-003	355.5173
Refrigerated Warehouse-No Rail	5.004e+006	1,060.8480	0.0658	0.0136	1,066.5520
Total		**1,414.4640**	**0.0878**	**0.0182**	**1,422.0693**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	1.668e+006	353.6160	0.0219	4.5400e-003	355.5173
Refrigerated Warehouse-No Rail	5.004e+006	1,060.8480	0.0658	0.0136	1,066.5520
Total		**1,414.4640**	**0.0878**	**0.0182**	**1,422.0693**

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Unmitigated	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247

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	0.0489					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-003	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Total	**0.3942**	**1.1000e-004**	**0.0119**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**6.0000e-005**	**0.0000**	**0.0247**

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	0.0489					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-003	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Total	**0.3942**	**1.1000e-004**	**0.0119**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**6.0000e-005**	**0.0000**	**0.0247**

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			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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 (100 - 175 HP)	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Total	**0.0136**	**0.0380**	**0.0493**	**7.0000e-005**		**2.0000e-003**	**2.0000e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**6.3060**	**6.3060**	**8.8000e-004**	**0.0000**	**6.3281**

11.0 Vegetation

Cactus Corridor Model Run with Tier 4 Engines

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Summer

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Summer

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Summer

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	35.00	29.00
tblConstructionPhase	NumDays	370.00	288.00
tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00

tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00

tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	115.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00

tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00
tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00

tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00
tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8292	114.9967	75.9833	0.1690	36.8185	5.1126	41.7488	20.0432	4.7501	24.6244	0.0000	16,427.4453	16,427.4453	4.3328	0.0000	16,535.7650
2022	17.5646	138.0282	131.0242	0.2923	10.4947	6.2269	16.7216	4.0626	5.9018	9.9644	0.0000	28,049.1184	28,049.1184	6.4969	0.0000	28,211.5402
2023	2.3036	19.5873	22.8548	0.0427	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,070.3120	4,070.3120	0.8566	0.0000	4,091.7276
Maximum	**17.5646**	**138.0282**	**131.0242**	**0.2923**	**36.8185**	**6.2269**	**41.7488**	**20.0432**	**5.9018**	**24.6244**	**0.0000**	**28,049.1184**	**28,049.1184**	**6.4969**	**0.0000**	**28,211.5402**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.4930	99.2506	77.7436	0.1690	16.1326	4.0803	20.0413	8.6726	3.7603	12.2748	0.0000	16,427.4452	16,427.4452	4.3328	0.0000	16,535.7650
2022	11.9665	92.2951	134.3217	0.2923	5.5293	3.4533	8.9825	2.0036	3.1917	5.1953	0.0000	28,049.1184	28,049.1184	6.4969	0.0000	28,211.5402
2023	1.0591	8.7522	23.6094	0.0427	0.1328	0.3221	0.4549	0.0351	0.2994	0.3345	0.0000	4,070.3120	4,070.3120	0.8566	0.0000	4,091.7276
Maximum	**11.9665**	**99.2506**	**134.3217**	**0.2923**	**16.1326**	**4.0803**	**20.0413**	**8.6726**	**3.7603**	**12.2748**	**0.0000**	**28,049.1184**	**28,049.1184**	**6.4969**	**0.0000**	**28,211.5402**

	ROG	NOx	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	**31.13**	**26.53**	**-2.53**	**0.00**	**54.06**	**36.01**	**50.49**	**55.63**	**37.18**	**49.87**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Stationary	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	**2.6796**	**9.0796**	**6.5821**	**0.0687**	**3.1183**	**0.0482**	**3.1665**	**0.8800**	**0.0460**	**0.9260**		**7,210.3419**	**7,210.3419**	**0.2280**	**0.0000**	**7,216.0420**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Stationary	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	**2.6796**	**9.0796**	**6.5821**	**0.0687**	**3.1183**	**0.0482**	**3.1665**	**0.8800**	**0.0460**	**0.9260**		**7,210.3419**	**7,210.3419**	**0.2280**	**0.0000**	**7,216.0420**

	ROG	NOx	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

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Summer

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29

Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20
Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	16	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612		3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**18.0663**	**1.8057**	**19.8719**	**9.9307**	**1.6612**	**11.5919**		**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5500e-003	0.0530	0.0117	1.6000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		17.0440	17.0440	1.2000e-003		17.0741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0350**	**0.0749**	**0.3121**	**1.0500e-003**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**105.5959**	**105.5959**	**3.5900e-003**		**105.6856**

3.2 Well Sites - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.5054	36.0044	16.2437	0.0353		1.7171	1.7171		1.5801	1.5801	0.0000	3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.5054**	**36.0044**	**16.2437**	**0.0353**	**7.7233**	**1.7171**	**9.4404**	**4.2454**	**1.5801**	**5.8254**	**0.0000**	**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5500e-003	0.0530	0.0117	1.6000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		17.0440	17.0440	1.2000e-003		17.0741
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0350**	**0.0749**	**0.3121**	**1.0500e-003**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**105.5959**	**105.5959**	**3.5900e-003**		**105.6856**

3.3 Treatment Plants - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056		3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**18.0663**	**1.8539**	**19.9202**	**9.9307**	**1.7056**	**11.6363**		**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0335**	**0.0218**	**0.3004**	**8.9000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**88.5519**	**88.5519**	**2.3900e-003**		**88.6115**

3.3 Treatment Plants - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.6569	37.3203	17.1447	0.0386		1.7654	1.7654		1.6245	1.6245	0.0000	3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.6569**	**37.3203**	**17.1447**	**0.0386**	**7.7233**	**1.7654**	**9.4887**	**4.2454**	**1.6245**	**5.8698**	**0.0000**	**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0335	0.0218	0.3004	8.9000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		88.5519	88.5519	2.3900e-003		88.6115
Total	**0.0335**	**0.0218**	**0.3004**	**8.9000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**88.5519**	**88.5519**	**2.3900e-003**		**88.6115**

3.4 Pipeline - Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058		4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**		**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0490	1.6723	0.3694	4.9500e-003	0.1682	5.2100e-003	0.1734	0.0445	4.9900e-003	0.0495		537.4168	537.4168	0.0379		538.3636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1256	0.0819	1.1264	3.3300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		332.0695	332.0695	8.9500e-003		332.2932
Total	**0.1746**	**1.7541**	**1.4958**	**8.2800e-003**	**0.5035**	**7.6900e-003**	**0.5112**	**0.1334**	**7.2800e-003**	**0.1407**		**869.4863**	**869.4863**	**0.0468**		**870.6569**

3.4 Pipeline - Trenching - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3362	12.1400	26.0637	0.0473		0.4171	0.4171		0.3890	0.3890	0.0000	4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**1.3362**	**12.1400**	**26.0637**	**0.0473**		**0.4171**	**0.4171**		**0.3890**	**0.3890**	**0.0000**	**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0490	1.6723	0.3694	4.9500e-003	0.1682	5.2100e-003	0.1734	0.0445	4.9900e-003	0.0495		537.4168	537.4168	0.0379		538.3636
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1256	0.0819	1.1264	3.3300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		332.0695	332.0695	8.9500e-003		332.2932
Total	**0.1746**	**1.7541**	**1.4958**	**8.2800e-003**	**0.5035**	**7.6900e-003**	**0.5112**	**0.1334**	**7.2800e-003**	**0.1407**		**869.4863**	**869.4863**	**0.0468**		**870.6569**

3.4 Pipeline - Trenching - 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	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115		4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**		**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	1.5479	0.3655	4.8800e-003	0.2435	4.5100e-003	0.2480	0.0630	4.3100e-003	0.0673		531.0137	531.0137	0.0373		531.9454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1178	0.0740	1.0417	3.2100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		320.1789	320.1789	8.0900e-003		320.3812
Total	**0.1644**	**1.6219**	**1.4071**	**8.0900e-003**	**0.5789**	**6.9200e-003**	**0.5858**	**0.1519**	**6.5300e-003**	**0.1585**		**851.1927**	**851.1927**	**0.0454**		**852.3266**

3.4 Pipeline - Trenching - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2323	10.5316	25.8161	0.0473		0.3506	0.3506		0.3279	0.3279	0.0000	4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**1.2323**	**10.5316**	**25.8161**	**0.0473**		**0.3506**	**0.3506**		**0.3279**	**0.3279**	**0.0000**	**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0466	1.5479	0.3655	4.8800e-003	0.2435	4.5100e-003	0.2480	0.0630	4.3100e-003	0.0673		531.0137	531.0137	0.0373		531.9454
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1178	0.0740	1.0417	3.2100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		320.1789	320.1789	8.0900e-003		320.3812
Total	**0.1644**	**1.6219**	**1.4071**	**8.0900e-003**	**0.5789**	**6.9200e-003**	**0.5858**	**0.1519**	**6.5300e-003**	**0.1585**		**851.1927**	**851.1927**	**0.0454**		**852.3266**

3.5 Treatment Plants - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676		6,702.9229	6,702.9229	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**8.6733**	**2.0291**	**10.7024**	**3.5965**	**1.8676**	**5.4641**		**6,702.9229**	**6,702.9229**	**2.1595**		**6,756.9114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0655	2.2352	0.4937	6.6100e-003	0.1506	6.9700e-003	0.1575	0.0413	6.6700e-003	0.0479		718.3307	718.3307	0.0506		719.5963
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0419	0.0273	0.3755	1.1100e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.6898	110.6898	2.9800e-003		110.7644
Total	**0.1074**	**2.2625**	**0.8692**	**7.7200e-003**	**0.2624**	**7.8000e-003**	**0.2701**	**0.0709**	**7.4300e-003**	**0.0783**		**829.0205**	**829.0205**	**0.0536**		**830.3607**

3.5 Treatment Plants - Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.3344	47.0146	31.3894	0.0694		1.9298	1.9298		1.7757	1.7757	0.0000	6,702.9228	6,702.9228	2.1595		6,756.9114
Total	**4.3344**	**47.0146**	**31.3894**	**0.0694**	**3.7079**	**1.9298**	**5.6376**	**1.5375**	**1.7757**	**3.3132**	**0.0000**	**6,702.9228**	**6,702.9228**	**2.1595**		**6,756.9114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0655	2.2352	0.4937	6.6100e-003	0.1506	6.9700e-003	0.1575	0.0413	6.6700e-003	0.0479		718.3307	718.3307	0.0506		719.5963
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0419	0.0273	0.3755	1.1100e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		110.6898	110.6898	2.9800e-003		110.7644
Total	**0.1074**	**2.2625**	**0.8692**	**7.7200e-003**	**0.2624**	**7.8000e-003**	**0.2701**	**0.0709**	**7.4300e-003**	**0.0783**		**829.0205**	**829.0205**	**0.0536**		**830.3607**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754		4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**		**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.8100e-003	0.0958	0.0233	2.5000e-004	6.4000e-003	2.0000e-004	6.5900e-003	1.8400e-003	1.9000e-004	2.0300e-003		27.0744	27.0744	1.6700e-003		27.1162
Worker	0.0628	0.0410	0.5632	1.6700e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		166.0347	166.0347	4.4800e-003		166.1466
Total	**0.0656**	**0.1367**	**0.5865**	**1.9200e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**193.1091**	**193.1091**	**6.1500e-003**		**193.2629**

3.6 Treatment Plants - Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4230	13.3655	26.2148	0.0455		0.5861	0.5861		0.5422	0.5422	0.0000	4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**1.4230**	**13.3655**	**26.2148**	**0.0455**		**0.5861**	**0.5861**		**0.5422**	**0.5422**	**0.0000**	**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.8100e-003	0.0958	0.0233	2.5000e-004	6.4000e-003	2.0000e-004	6.5900e-003	1.8400e-003	1.9000e-004	2.0300e-003		27.0744	27.0744	1.6700e-003		27.1162
Worker	0.0628	0.0410	0.5632	1.6700e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		166.0347	166.0347	4.4800e-003		166.1466
Total	**0.0656**	**0.1367**	**0.5865**	**1.9200e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**193.1091**	**193.1091**	**6.1500e-003**		**193.2629**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656		4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**		**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.6400e-003	0.0910	0.0220	2.5000e-004	6.4000e-003	1.7000e-004	6.5700e-003	1.8400e-003	1.6000e-004	2.0000e-003		26.8370	26.8370	1.6200e-003		26.8774
Worker	0.0589	0.0370	0.5208	1.6100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		160.0895	160.0895	4.0500e-003		160.1906
Total	**0.0615**	**0.1280**	**0.5429**	**1.8600e-003**	**0.1741**	**1.3800e-003**	**0.1754**	**0.0463**	**1.2700e-003**	**0.0476**		**186.9265**	**186.9265**	**5.6700e-003**		**187.0681**

3.6 Treatment Plants - Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3027	11.7233	25.9726	0.0455		0.4983	0.4983		0.4615	0.4615	0.0000	4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**1.3027**	**11.7233**	**25.9726**	**0.0455**		**0.4983**	**0.4983**		**0.4615**	**0.4615**	**0.0000**	**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.6400e-003	0.0910	0.0220	2.5000e-004	6.4000e-003	1.7000e-004	6.5700e-003	1.8400e-003	1.6000e-004	2.0000e-003		26.8370	26.8370	1.6200e-003		26.8774
Worker	0.0589	0.0370	0.5208	1.6100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		160.0895	160.0895	4.0500e-003		160.1906
Total	**0.0615**	**0.1280**	**0.5429**	**1.8600e-003**	**0.1741**	**1.3800e-003**	**0.1754**	**0.0463**	**1.2700e-003**	**0.0476**		**186.9265**	**186.9265**	**5.6700e-003**		**187.0681**

3.7 Treatment Plants - Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087		1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**		**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0109	0.1502	4.4000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		44.2759	44.2759	1.1900e-003		44.3058
Total	**0.0167**	**0.0109**	**0.1502**	**4.4000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**44.2759**	**44.2759**	**1.1900e-003**		**44.3058**

3.7 Treatment Plants - Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3820	2.9742	6.6769	0.0145		0.1071	0.1071		0.0994	0.0994	0.0000	1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**2.6645**	**2.9742**	**6.6769**	**0.0145**		**0.1071**	**0.1071**		**0.0994**	**0.0994**	**0.0000**	**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0109	0.1502	4.4000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		44.2759	44.2759	1.1900e-003		44.3058
Total	**0.0167**	**0.0109**	**0.1502**	**4.4000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**44.2759**	**44.2759**	**1.1900e-003**		**44.3058**

3.7 Treatment Plants - 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	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590		1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**		**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0157	9.8600e-003	0.1389	4.3000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		42.6905	42.6905	1.0800e-003		42.7175
Total	**0.0157**	**9.8600e-003**	**0.1389**	**4.3000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**42.6905**	**42.6905**	**1.0800e-003**		**42.7175**

3.7 Treatment Plants - Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3433	2.3494	6.5541	0.0145		0.0835	0.0835		0.0777	0.0777	0.0000	1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.6258**	**2.3494**	**6.5541**	**0.0145**		**0.0835**	**0.0835**		**0.0777**	**0.0777**	**0.0000**	**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0157	9.8600e-003	0.1389	4.3000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		42.6905	42.6905	1.0800e-003		42.7175
Total	**0.0157**	**9.8600e-003**	**0.1389**	**4.3000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**42.6905**	**42.6905**	**1.0800e-003**		**42.7175**

3.8 Well Sites - Well Drilling - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555		16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**8.6733**	**3.6630**	**12.3363**	**3.5965**	**3.4555**	**7.0520**		**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.4800e-003	0.2486	0.0587	7.8000e-004	0.0729	7.2000e-004	0.0736	0.0184	6.9000e-004	0.0191		85.2741	85.2741	5.9800e-003		85.4237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.0469	0.6597	2.0300e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		202.7800	202.7800	5.1200e-003		202.9081
Total	**0.0821**	**0.2954**	**0.7184**	**2.8100e-003**	**1.0238**	**2.2500e-003**	**1.0260**	**0.2560**	**2.1000e-003**	**0.2581**		**288.0541**	**288.0541**	**0.0111**		**288.3318**

3.8 Well Sites - Well Drilling - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	6.4821	65.6357	73.1717	0.1718		2.5100	2.5100		2.3145	2.3145	0.0000	16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**6.4821**	**65.6357**	**73.1717**	**0.1718**	**3.7079**	**2.5100**	**6.2179**	**1.5375**	**2.3145**	**3.8520**	**0.0000**	**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.4800e-003	0.2486	0.0587	7.8000e-004	0.0729	7.2000e-004	0.0736	0.0184	6.9000e-004	0.0191		85.2741	85.2741	5.9800e-003		85.4237
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0746	0.0469	0.6597	2.0300e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		202.7800	202.7800	5.1200e-003		202.9081
Total	**0.0821**	**0.2954**	**0.7184**	**2.8100e-003**	**1.0238**	**2.2500e-003**	**1.0260**	**0.2560**	**2.1000e-003**	**0.2581**		**288.0541**	**288.0541**	**0.0111**		**288.3318**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268		3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**		**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2300e-003	0.0408	9.6200e-003	1.3000e-004	3.7000e-003	1.2000e-004	3.8100e-003	9.9000e-004	1.1000e-004	1.1100e-003		13.9812	13.9812	9.8000e-004		14.0057
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0432	0.0271	0.3819	1.1800e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		117.3990	117.3990	2.9700e-003		117.4731
Total	**0.0444**	**0.0679**	**0.3916**	**1.3100e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.2000e-004**	**0.0345**		**131.3801**	**131.3801**	**3.9500e-003**		**131.4788**

3.9 Well Sites - Pump installation/construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0630	9.3808	23.3434	0.0415		0.3565	0.3565		0.3311	0.3311	0.0000	3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**1.0630**	**9.3808**	**23.3434**	**0.0415**		**0.3565**	**0.3565**		**0.3311**	**0.3311**	**0.0000**	**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2300e-003	0.0408	9.6200e-003	1.3000e-004	3.7000e-003	1.2000e-004	3.8100e-003	9.9000e-004	1.1000e-004	1.1100e-003		13.9812	13.9812	9.8000e-004		14.0057
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0432	0.0271	0.3819	1.1800e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		117.3990	117.3990	2.9700e-003		117.4731
Total	**0.0444**	**0.0679**	**0.3916**	**1.3100e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.2000e-004**	**0.0345**		**131.3801**	**131.3801**	**3.9500e-003**		**131.4788**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897		3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**		**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0263	8.7800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5500e-003		13.4078	13.4078	9.1000e-004		13.4306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0406	0.0246	0.3527	1.1300e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		113.0261	113.0261	2.6800e-003		113.0930
Total	**0.0414**	**0.0508**	**0.3615**	**1.2500e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**126.4339**	**126.4339**	**3.5900e-003**		**126.5236**

3.9 Well Sites - Pump installation/construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0176	8.7014	23.2479	0.0415		0.3212	0.3212		0.2986	0.2986	0.0000	3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**1.0176**	**8.7014**	**23.2479**	**0.0415**		**0.3212**	**0.3212**		**0.2986**	**0.2986**	**0.0000**	**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0263	8.7800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5500e-003		13.4078	13.4078	9.1000e-004		13.4306
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0406	0.0246	0.3527	1.1300e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		113.0261	113.0261	2.6800e-003		113.0930
Total	**0.0414**	**0.0508**	**0.3615**	**1.2500e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**126.4339**	**126.4339**	**3.5900e-003**		**126.5236**

3.10 Treatment Plants - 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	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039		2,897.6693	2,897.6693	0.9261		2,920.8211
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**		**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8211**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0196	0.0123	0.1736	5.4000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		53.3632	53.3632	1.3500e-003		53.3969
Total	**0.0196**	**0.0123**	**0.1736**	**5.4000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**53.3632**	**53.3632**	**1.3500e-003**		**53.3969**

3.10 Treatment Plants - Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5447	3.2222	18.9750	0.0301		0.1104	0.1104		0.1045	0.1045	0.0000	2,897.6693	2,897.6693	0.9261		2,920.8210
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8921**	**3.2222**	**18.9750**	**0.0301**		**0.1104**	**0.1104**		**0.1045**	**0.1045**	**0.0000**	**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0196	0.0123	0.1736	5.4000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		53.3632	53.3632	1.3500e-003		53.3969
Total	**0.0196**	**0.0123**	**0.1736**	**5.4000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**53.3632**	**53.3632**	**1.3500e-003**		**53.3969**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247
Unmitigated	0.5169	9.0787	6.4869	0.0687	3.1183	0.0479	3.1662	0.8800	0.0456	0.9257		7,210.1379	7,210.1379	0.2275		7,215.8247

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Unmitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	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**

11.0 Vegetation

Cactus Corridor Model Run with Tier 4 Engines

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Winter

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Winter

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Winter

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	370.00	288.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	35.00	29.00
tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00

tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00

tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	115.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00

tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00
tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00

tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00
tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	12.8550	115.0584	75.8079	0.1685	36.8185	5.1128	41.7488	20.0432	4.7502	24.6245	0.0000	16,372.5929	16,372.5929	4.3352	0.0000	16,480.9737
2022	17.5941	138.0648	130.8258	0.2918	10.4947	6.2269	16.7217	4.0626	5.9019	9.9644	0.0000	27,992.6382	27,992.6382	6.4974	0.0000	28,155.0721
2023	2.3080	19.5898	22.8206	0.0426	0.1328	0.9371	1.0699	0.0351	0.8906	0.9257	0.0000	4,063.0615	4,063.0615	0.8565	0.0000	4,084.4733
Maximum	**17.5941**	**138.0648**	**130.8258**	**0.2918**	**36.8185**	**6.2269**	**41.7488**	**20.0432**	**5.9019**	**24.6245**	**0.0000**	**27,992.6382**	**27,992.6382**	**6.4974**	**0.0000**	**28,155.0721**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	9.5165	99.3123	77.5682	0.1685	16.1326	4.0804	20.0414	8.6726	3.7605	12.2749	0.0000	16,372.5929	16,372.5929	4.3352	0.0000	16,480.9737
2022	11.9961	92.3317	134.1232	0.2918	5.5293	3.4534	8.9826	2.0036	3.1918	5.1954	0.0000	27,992.6382	27,992.6382	6.4974	0.0000	28,155.0721
2023	1.0635	8.7548	23.5752	0.0426	0.1328	0.3221	0.4549	0.0351	0.2994	0.3345	0.0000	4,063.0615	4,063.0615	0.8565	0.0000	4,084.4733
Maximum	**11.9961**	**99.3123**	**134.1232**	**0.2918**	**16.1326**	**4.0804**	**20.0414**	**8.6726**	**3.7605**	**12.2749**	**0.0000**	**27,992.6382**	**27,992.6382**	**6.4974**	**0.0000**	**28,155.0721**

	ROG	NOx	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	**31.08**	**26.52**	**-2.53**	**0.00**	**54.06**	**36.01**	**50.49**	**55.63**	**37.17**	**49.87**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Stationary	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	**2.6799**	**9.3231**	**6.3950**	**0.0679**	**3.1183**	**0.0484**	**3.1667**	**0.8800**	**0.0462**	**0.9262**		**7,128.3948**	**7,128.3948**	**0.2301**	**0.0000**	**7,134.1466**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Stationary	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	**2.6799**	**9.3231**	**6.3950**	**0.0679**	**3.1183**	**0.0484**	**3.1667**	**0.8800**	**0.0462**	**0.9262**		**7,128.3948**	**7,128.3948**	**0.2301**	**0.0000**	**7,134.1466**

	ROG	**NOx**	**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

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29
Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20

Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	16	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.6293	37.4414	16.1757	0.0353		1.8057	1.8057		1.6612	1.6612		3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.6293**	**37.4414**	**16.1757**	**0.0353**	**18.0663**	**1.8057**	**19.8719**	**9.9307**	**1.6612**	**11.5919**		**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5900e-003	0.0537	0.0125	1.5000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		16.7514	16.7514	1.2500e-003		16.7825
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0385**	**0.0777**	**0.2844**	**9.8000e-004**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**99.8035**	**99.8035**	**3.4800e-003**		**99.8905**

3.2 Well Sites - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.5054	36.0044	16.2437	0.0353		1.7171	1.7171		1.5801	1.5801	0.0000	3,422.2182	3,422.2182	1.1068		3,449.8885
Total	**3.5054**	**36.0044**	**16.2437**	**0.0353**	**7.7233**	**1.7171**	**9.4404**	**4.2454**	**1.5801**	**5.8254**	**0.0000**	**3,422.2182**	**3,422.2182**	**1.1068**		**3,449.8885**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5900e-003	0.0537	0.0125	1.5000e-004	3.5700e-003	1.7000e-004	3.7400e-003	9.8000e-004	1.6000e-004	1.1400e-003		16.7514	16.7514	1.2500e-003		16.7825
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0385**	**0.0777**	**0.2844**	**9.8000e-004**	**0.0930**	**8.3000e-004**	**0.0938**	**0.0247**	**7.7000e-004**	**0.0255**		**99.8035**	**99.8035**	**3.4800e-003**		**99.8905**

3.3 Treatment Plants - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.7808	38.7572	17.0768	0.0386		1.8539	1.8539		1.7056	1.7056		3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.7808**	**38.7572**	**17.0768**	**0.0386**	**18.0663**	**1.8539**	**19.9202**	**9.9307**	**1.7056**	**11.6363**		**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0369**	**0.0240**	**0.2719**	**8.3000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**83.0521**	**83.0521**	**2.2300e-003**		**83.1079**

3.3 Treatment Plants - Site Prep - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.7233	0.0000	7.7233	4.2454	0.0000	4.2454			0.0000			0.0000
Off-Road	3.6569	37.3203	17.1447	0.0386		1.7654	1.7654		1.6245	1.6245	0.0000	3,741.8489	3,741.8489	1.2102		3,772.1037
Total	**3.6569**	**37.3203**	**17.1447**	**0.0386**	**7.7233**	**1.7654**	**9.4887**	**4.2454**	**1.6245**	**5.8698**	**0.0000**	**3,741.8489**	**3,741.8489**	**1.2102**		**3,772.1037**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0369	0.0240	0.2719	8.3000e-004	0.0894	6.6000e-004	0.0901	0.0237	6.1000e-004	0.0243		83.0521	83.0521	2.2300e-003		83.1079
Total	**0.0369**	**0.0240**	**0.2719**	**8.3000e-004**	**0.0894**	**6.6000e-004**	**0.0901**	**0.0237**	**6.1000e-004**	**0.0243**		**83.0521**	**83.0521**	**2.2300e-003**		**83.1079**

3.4 Pipeline - Trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.8678	24.7361	24.9882	0.0473		1.2615	1.2615		1.2058	1.2058		4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**2.8678**	**24.7361**	**24.9882**	**0.0473**		**1.2615**	**1.2615**		**1.2058**	**1.2058**		**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0503	1.6929	0.3936	4.8600e-003	0.1682	5.2900e-003	0.1735	0.0445	5.0600e-003	0.0496		528.1894	528.1894	0.0393		529.1717
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1384	0.0899	1.0196	3.1300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		311.4454	311.4454	8.3800e-003		311.6548
Total	**0.1886**	**1.7828**	**1.4132**	**7.9900e-003**	**0.5035**	**7.7700e-003**	**0.5113**	**0.1334**	**7.3500e-003**	**0.1408**		**839.6347**	**839.6347**	**0.0477**		**840.8264**

3.4 Pipeline - Trenching - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3362	12.1400	26.0637	0.0473		0.4171	0.4171		0.3890	0.3890	0.0000	4,498.2016	4,498.2016	0.9624		4,522.2620
Total	**1.3362**	**12.1400**	**26.0637**	**0.0473**		**0.4171**	**0.4171**		**0.3890**	**0.3890**	**0.0000**	**4,498.2016**	**4,498.2016**	**0.9624**		**4,522.2620**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0503	1.6929	0.3936	4.8600e-003	0.1682	5.2900e-003	0.1735	0.0445	5.0600e-003	0.0496		528.1894	528.1894	0.0393		529.1717
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1384	0.0899	1.0196	3.1300e-003	0.3353	2.4800e-003	0.3378	0.0889	2.2900e-003	0.0912		311.4454	311.4454	8.3800e-003		311.6548
Total	**0.1886**	**1.7828**	**1.4132**	**7.9900e-003**	**0.5035**	**7.7700e-003**	**0.5113**	**0.1334**	**7.3500e-003**	**0.1408**		**839.6347**	**839.6347**	**0.0477**		**840.8264**

3.4 Pipeline - Trenching - 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	lb/day										lb/day					
Off-Road	2.5839	21.6011	24.6302	0.0473		1.0564	1.0564		1.0115	1.0115		4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**2.5839**	**21.6011**	**24.6302**	**0.0473**		**1.0564**	**1.0564**		**1.0115**	**1.0115**		**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0478	1.5655	0.3885	4.8000e-003	0.2435	4.5800e-003	0.2481	0.0630	4.3800e-003	0.0674		521.8183	521.8183	0.0386		522.7838
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1301	0.0812	0.9412	3.0100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		300.2937	300.2937	7.5700e-003		300.4828
Total	**0.1779**	**1.6467**	**1.3297**	**7.8100e-003**	**0.5789**	**6.9900e-003**	**0.5858**	**0.1519**	**6.6000e-003**	**0.1585**		**822.1120**	**822.1120**	**0.0462**		**823.2666**

3.4 Pipeline - Trenching - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2323	10.5316	25.8161	0.0473		0.3506	0.3506		0.3279	0.3279	0.0000	4,499.1169	4,499.1169	0.9552		4,522.9975
Total	**1.2323**	**10.5316**	**25.8161**	**0.0473**		**0.3506**	**0.3506**		**0.3279**	**0.3279**	**0.0000**	**4,499.1169**	**4,499.1169**	**0.9552**		**4,522.9975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0478	1.5655	0.3885	4.8000e-003	0.2435	4.5800e-003	0.2481	0.0630	4.3800e-003	0.0674		521.8183	521.8183	0.0386		522.7838
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1301	0.0812	0.9412	3.0100e-003	0.3353	2.4100e-003	0.3377	0.0889	2.2200e-003	0.0912		300.2937	300.2937	7.5700e-003		300.4828
Total	**0.1779**	**1.6467**	**1.3297**	**7.8100e-003**	**0.5789**	**6.9900e-003**	**0.5858**	**0.1519**	**6.6000e-003**	**0.1585**		**822.1120**	**822.1120**	**0.0462**		**823.2666**

3.5 Treatment Plants - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.5024	48.7277	31.5528	0.0694		2.0291	2.0291		1.8676	1.8676		6,702.9229	6,702.9229	2.1595		6,756.9114
Total	**4.5024**	**48.7277**	**31.5528**	**0.0694**	**8.6733**	**2.0291**	**10.7024**	**3.5965**	**1.8676**	**5.4641**		**6,702.9229**	**6,702.9229**	**2.1595**		**6,756.9114**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	2.2627	0.5260	6.5000e-003	0.1506	7.0700e-003	0.1576	0.0413	6.7700e-003	0.0480		705.9970	705.9970	0.0525		707.3100
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3399	1.0400e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.8151	103.8151	2.7900e-003		103.8849
Total	**0.1133**	**2.2927**	**0.8659**	**7.5400e-003**	**0.2624**	**7.9000e-003**	**0.2702**	**0.0709**	**7.5300e-003**	**0.0784**		**809.8121**	**809.8121**	**0.0553**		**811.1949**

3.5 Treatment Plants - Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	4.3344	47.0146	31.3894	0.0694		1.9298	1.9298		1.7757	1.7757	0.0000	6,702.9228	6,702.9228	2.1595		6,756.9114
Total	**4.3344**	**47.0146**	**31.3894**	**0.0694**	**3.7079**	**1.9298**	**5.6376**	**1.5375**	**1.7757**	**3.3132**	**0.0000**	**6,702.9228**	**6,702.9228**	**2.1595**		**6,756.9114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	2.2627	0.5260	6.5000e-003	0.1506	7.0700e-003	0.1576	0.0413	6.7700e-003	0.0480		705.9970	705.9970	0.0525		707.3100
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0300	0.3399	1.0400e-003	0.1118	8.3000e-004	0.1126	0.0296	7.6000e-004	0.0304		103.8151	103.8151	2.7900e-003		103.8849
Total	**0.1133**	**2.2927**	**0.8659**	**7.5400e-003**	**0.2624**	**7.9000e-003**	**0.2702**	**0.0709**	**7.5300e-003**	**0.0784**		**809.8121**	**809.8121**	**0.0553**		**811.1949**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.9678	26.7119	25.8916	0.0455		1.4549	1.4549		1.3754	1.3754		4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**2.9678**	**26.7119**	**25.8916**	**0.0455**		**1.4549**	**1.4549**		**1.3754**	**1.3754**		**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9600e-003	0.0955	0.0259	2.5000e-004	6.4000e-003	2.0000e-004	6.6000e-003	1.8400e-003	1.9000e-004	2.0300e-003		26.3374	26.3374	1.7900e-003		26.3821
Worker	0.0692	0.0450	0.5098	1.5600e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		155.7227	155.7227	4.1900e-003		155.8274
Total	**0.0721**	**0.1405**	**0.5357**	**1.8100e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**182.0601**	**182.0601**	**5.9800e-003**		**182.2095**

3.6 Treatment Plants - Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4230	13.3655	26.2148	0.0455		0.5861	0.5861		0.5422	0.5422	0.0000	4,330.2877	4,330.2877	0.9951		4,355.1642
Total	**1.4230**	**13.3655**	**26.2148**	**0.0455**		**0.5861**	**0.5861**		**0.5422**	**0.5422**	**0.0000**	**4,330.2877**	**4,330.2877**	**0.9951**		**4,355.1642**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.9600e-003	0.0955	0.0259	2.5000e-004	6.4000e-003	2.0000e-004	6.6000e-003	1.8400e-003	1.9000e-004	2.0300e-003		26.3374	26.3374	1.7900e-003		26.3821
Worker	0.0692	0.0450	0.5098	1.5600e-003	0.1677	1.2400e-003	0.1689	0.0445	1.1400e-003	0.0456		155.7227	155.7227	4.1900e-003		155.8274
Total	**0.0721**	**0.1405**	**0.5357**	**1.8100e-003**	**0.1741**	**1.4400e-003**	**0.1755**	**0.0463**	**1.3300e-003**	**0.0476**		**182.0601**	**182.0601**	**5.9800e-003**		**182.2095**

3.6 Treatment Plants - 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	lb/day										lb/day					
Off-Road	2.6790	23.7590	25.5329	0.0455		1.2318	1.2318		1.1656	1.1656		4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**2.6790**	**23.7590**	**25.5329**	**0.0455**		**1.2318**	**1.2318**		**1.1656**	**1.1656**		**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.7700e-003	0.0907	0.0245	2.4000e-004	6.4000e-003	1.8000e-004	6.5700e-003	1.8400e-003	1.7000e-004	2.0100e-003		26.1022	26.1022	1.7300e-003		26.1454
Worker	0.0651	0.0406	0.4706	1.5100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		150.1468	150.1468	3.7800e-003		150.2414
Total	**0.0678**	**0.1313**	**0.4951**	**1.7500e-003**	**0.1741**	**1.3900e-003**	**0.1754**	**0.0463**	**1.2800e-003**	**0.0476**		**176.2490**	**176.2490**	**5.5100e-003**		**176.3868**

3.6 Treatment Plants - Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3027	11.7233	25.9726	0.0455		0.4983	0.4983		0.4615	0.4615	0.0000	4,331.0346	4,331.0346	0.9888		4,355.7553
Total	**1.3027**	**11.7233**	**25.9726**	**0.0455**		**0.4983**	**0.4983**		**0.4615**	**0.4615**	**0.0000**	**4,331.0346**	**4,331.0346**	**0.9888**		**4,355.7553**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.7700e-003	0.0907	0.0245	2.4000e-004	6.4000e-003	1.8000e-004	6.5700e-003	1.8400e-003	1.7000e-004	2.0100e-003		26.1022	26.1022	1.7300e-003		26.1454
Worker	0.0651	0.0406	0.4706	1.5100e-003	0.1677	1.2100e-003	0.1689	0.0445	1.1100e-003	0.0456		150.1468	150.1468	3.7800e-003		150.2414
Total	**0.0678**	**0.1313**	**0.4951**	**1.7500e-003**	**0.1741**	**1.3900e-003**	**0.1754**	**0.0463**	**1.2800e-003**	**0.0476**		**176.2490**	**176.2490**	**5.5100e-003**		**176.3868**

3.7 Treatment Plants - Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7899	6.5332	6.3833	0.0145		0.3164	0.3164		0.3087	0.3087		1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**3.0724**	**6.5332**	**6.3833**	**0.0145**		**0.3164**	**0.3164**		**0.3087**	**0.3087**		**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0185	0.0120	0.1360	4.2000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		41.5261	41.5261	1.1200e-003		41.5540
Total	**0.0185**	**0.0120**	**0.1360**	**4.2000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**41.5261**	**41.5261**	**1.1200e-003**		**41.5540**

3.7 Treatment Plants - Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3820	2.9742	6.6769	0.0145		0.1071	0.1071		0.0994	0.0994	0.0000	1,387.9855	1,387.9855	0.2499		1,394.2332
Total	**2.6645**	**2.9742**	**6.6769**	**0.0145**		**0.1071**	**0.1071**		**0.0994**	**0.0994**	**0.0000**	**1,387.9855**	**1,387.9855**	**0.2499**		**1,394.2332**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0185	0.0120	0.1360	4.2000e-004	0.0447	3.3000e-004	0.0450	0.0119	3.0000e-004	0.0122		41.5261	41.5261	1.1200e-003		41.5540
Total	**0.0185**	**0.0120**	**0.1360**	**4.2000e-004**	**0.0447**	**3.3000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**41.5261**	**41.5261**	**1.1200e-003**		**41.5540**

3.7 Treatment Plants - 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	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.7162	5.6115	6.2499	0.0145		0.2649	0.2649		0.2590	0.2590		1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.9987**	**5.6115**	**6.2499**	**0.0145**		**0.2649**	**0.2649**		**0.2590**	**0.2590**		**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0174	0.0108	0.1255	4.0000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		40.0392	40.0392	1.0100e-003		40.0644
Total	**0.0174**	**0.0108**	**0.1255**	**4.0000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**40.0392**	**40.0392**	**1.0100e-003**		**40.0644**

3.7 Treatment Plants - Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.2825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3433	2.3494	6.5541	0.0145		0.0835	0.0835		0.0777	0.0777	0.0000	1,388.2166	1,388.2166	0.2474		1,394.4004
Total	**2.6258**	**2.3494**	**6.5541**	**0.0145**		**0.0835**	**0.0835**		**0.0777**	**0.0777**	**0.0000**	**1,388.2166**	**1,388.2166**	**0.2474**		**1,394.4004**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0174	0.0108	0.1255	4.0000e-004	0.0447	3.2000e-004	0.0450	0.0119	3.0000e-004	0.0122		40.0392	40.0392	1.0100e-003		40.0644
Total	**0.0174**	**0.0108**	**0.1255**	**4.0000e-004**	**0.0447**	**3.2000e-004**	**0.0450**	**0.0119**	**3.0000e-004**	**0.0122**		**40.0392**	**40.0392**	**1.0100e-003**		**40.0644**

3.8 Well Sites - Well Drilling - 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	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	8.9793	85.0015	71.8040	0.1718		3.6630	3.6630		3.4555	3.4555		16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**8.9793**	**85.0015**	**71.8040**	**0.1718**	**8.6733**	**3.6630**	**12.3363**	**3.5965**	**3.4555**	**7.0520**		**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6800e-003	0.2514	0.0624	7.7000e-004	0.0729	7.3000e-004	0.0736	0.0184	7.0000e-004	0.0191		83.7974	83.7974	6.2000e-003		83.9524
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0824	0.0514	0.5961	1.9100e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		190.1860	190.1860	4.7900e-003		190.3058
Total	**0.0901**	**0.3028**	**0.6585**	**2.6800e-003**	**1.0238**	**2.2600e-003**	**1.0260**	**0.2560**	**2.1100e-003**	**0.2581**		**273.9834**	**273.9834**	**0.0110**		**274.2582**

3.8 Well Sites - Well Drilling - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7079	0.0000	3.7079	1.5375	0.0000	1.5375			0.0000			0.0000
Off-Road	6.4821	65.6357	73.1717	0.1718		2.5100	2.5100		2.3145	2.3145	0.0000	16,461.8866	16,461.8866	4.2423		16,567.9430
Total	**6.4821**	**65.6357**	**73.1717**	**0.1718**	**3.7079**	**2.5100**	**6.2179**	**1.5375**	**2.3145**	**3.8520**	**0.0000**	**16,461.8866**	**16,461.8866**	**4.2423**		**16,567.9430**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6800e-003	0.2514	0.0624	7.7000e-004	0.0729	7.3000e-004	0.0736	0.0184	7.0000e-004	0.0191		83.7974	83.7974	6.2000e-003		83.9524
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0824	0.0514	0.5961	1.9100e-003	0.9509	1.5300e-003	0.9524	0.2376	1.4100e-003	0.2390		190.1860	190.1860	4.7900e-003		190.3058
Total	**0.0901**	**0.3028**	**0.6585**	**2.6800e-003**	**1.0238**	**2.2600e-003**	**1.0260**	**0.2560**	**2.1100e-003**	**0.2581**		**273.9834**	**273.9834**	**0.0110**		**274.2582**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.4389	21.2576	22.6553	0.0415		1.0805	1.0805		1.0268	1.0268		3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**2.4389**	**21.2576**	**22.6553**	**0.0415**		**1.0805**	**1.0805**		**1.0268**	**1.0268**		**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2600e-003	0.0412	0.0102	1.3000e-004	3.7000e-003	1.2000e-004	3.8200e-003	9.9000e-004	1.2000e-004	1.1100e-003		13.7391	13.7391	1.0200e-003		13.7645
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0298	0.3451	1.1000e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		110.1077	110.1077	2.7700e-003		110.1770
Total	**0.0490**	**0.0710**	**0.3553**	**1.2300e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.3000e-004**	**0.0345**		**123.8467**	**123.8467**	**3.7900e-003**		**123.9415**

3.9 Well Sites - Pump installation/construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0630	9.3808	23.3434	0.0415		0.3565	0.3565		0.3311	0.3311	0.0000	3,942.5502	3,942.5502	0.8609		3,964.0737
Total	**1.0630**	**9.3808**	**23.3434**	**0.0415**		**0.3565**	**0.3565**		**0.3311**	**0.3311**	**0.0000**	**3,942.5502**	**3,942.5502**	**0.8609**		**3,964.0737**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.2600e-003	0.0412	0.0102	1.3000e-004	3.7000e-003	1.2000e-004	3.8200e-003	9.9000e-004	1.2000e-004	1.1100e-003		13.7391	13.7391	1.0200e-003		13.7645
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0298	0.3451	1.1000e-003	0.1230	8.8000e-004	0.1238	0.0326	8.1000e-004	0.0334		110.1077	110.1077	2.7700e-003		110.1770
Total	**0.0490**	**0.0710**	**0.3553**	**1.2300e-003**	**0.1267**	**1.0000e-003**	**0.1277**	**0.0336**	**9.3000e-004**	**0.0345**		**123.8467**	**123.8467**	**3.7900e-003**		**123.9415**

3.9 Well Sites - Pump installation/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	lb/day										lb/day					
Off-Road	2.2622	19.5365	22.4933	0.0415		0.9362	0.9362		0.8897	0.8897		3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**2.2622**	**19.5365**	**22.4933**	**0.0415**		**0.9362**	**0.9362**		**0.8897**	**0.8897**		**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-004	0.0264	9.1800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5600e-003		13.1772	13.1772	9.4000e-004		13.2007
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0450	0.0269	0.3181	1.0600e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		106.0062	106.0062	2.5000e-003		106.0687
Total	**0.0458**	**0.0534**	**0.3273**	**1.1800e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**119.1833**	**119.1833**	**3.4400e-003**		**119.2693**

3.9 Well Sites - Pump installation/construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0176	8.7014	23.2479	0.0415		0.3212	0.3212		0.2986	0.2986	0.0000	3,943.8782	3,943.8782	0.8530		3,965.2040
Total	**1.0176**	**8.7014**	**23.2479**	**0.0415**		**0.3212**	**0.3212**		**0.2986**	**0.2986**	**0.0000**	**3,943.8782**	**3,943.8782**	**0.8530**		**3,965.2040**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.3000e-004	0.0264	9.1800e-003	1.2000e-004	9.8700e-003	5.0000e-005	9.9200e-003	2.5100e-003	5.0000e-005	2.5600e-003		13.1772	13.1772	9.4000e-004		13.2007
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0450	0.0269	0.3181	1.0600e-003	0.1230	8.6000e-004	0.1238	0.0326	7.9000e-004	0.0334		106.0062	106.0062	2.5000e-003		106.0687
Total	**0.0458**	**0.0534**	**0.3273**	**1.1800e-003**	**0.1328**	**9.1000e-004**	**0.1337**	**0.0351**	**8.4000e-004**	**0.0360**		**119.1833**	**119.1833**	**3.4400e-003**		**119.2693**

3.10 Treatment Plants - 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	lb/day										lb/day					
Off-Road	1.4258	13.4999	16.5683	0.0301		0.6552	0.6552		0.6039	0.6039		2,897.6693	2,897.6693	0.9261		2,920.8211
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7732**	**13.4999**	**16.5683**	**0.0301**		**0.6552**	**0.6552**		**0.6039**	**0.6039**		**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8211**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0135	0.1569	5.0000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		50.0489	50.0489	1.2600e-003		50.0805
Total	**0.0217**	**0.0135**	**0.1569**	**5.0000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**50.0489**	**50.0489**	**1.2600e-003**		**50.0805**

3.10 Treatment Plants - Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5447	3.2222	18.9750	0.0301		0.1104	0.1104		0.1045	0.1045	0.0000	2,897.6693	2,897.6693	0.9261		2,920.8210
Paving	0.3474					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8921**	**3.2222**	**18.9750**	**0.0301**		**0.1104**	**0.1104**		**0.1045**	**0.1045**	**0.0000**	**2,897.6693**	**2,897.6693**	**0.9261**		**2,920.8210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0135	0.1569	5.0000e-004	0.2017	4.0000e-004	0.2021	0.0506	3.7000e-004	0.0510		50.0489	50.0489	1.2600e-003		50.0805
Total	**0.0217**	**0.0135**	**0.1569**	**5.0000e-004**	**0.2017**	**4.0000e-004**	**0.2021**	**0.0506**	**3.7000e-004**	**0.0510**		**50.0489**	**50.0489**	**1.2600e-003**		**50.0805**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292
Unmitigated	0.5172	9.3222	6.2998	0.0679	3.1183	0.0481	3.1664	0.8800	0.0458	0.9258		7,128.1908	7,128.1908	0.2295		7,133.9292

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Unmitigated	2.1627	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2681					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8858					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	8.8100e-003	8.7000e-004	0.0951	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004		0.2040	0.2040	5.3000e-004		0.2173
Total	**2.1627**	**8.7000e-004**	**0.0951**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**		**0.2040**	**0.2040**	**5.3000e-004**		**0.2173**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	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**

11.0 Vegetation

Cactus Corridor Model Run with Tier 4 Engines

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Refrigerated Warehouse-No Rail	20.00	1000sqft	0.46	20,000.00	0
Refrigerated Warehouse-No Rail	60.00	1000sqft	1.38	60,000.00	0
Other Asphalt Surfaces	133.00	1000sqft	3.05	133,000.00	0
Other Non-Asphalt Surfaces	719.00	1000sqft	16.51	719,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	467.38	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Annual

Project Characteristics - Based on 2018 SCE information for Intensity Factor

Land Use - First Line is the larger of the two treatment site options
Second line includes all the area of the well sites
Third line is the pipeline.
Fourth is 6 well site well pads

Construction Phase - Based on Engineer estimates and CalEEMod Default Ratios

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Equipment included in Pipeline Construction phase because all work happens simultaneously

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engeering Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on Engineer Estimates

Off-road Equipment - Based on engineering estimates

Off-road Equipment - Based on Engineering Estimates

Off-road Equipment - Based on Engineering Estimates.
This phase lasts 24 hours a day to prevent borehold collapse. Thus, all normal 8hr/workday estimates have been multiplied by 3.

Trips and VMT - based on engineering estimates

Architectural Coating - No residential structures being built.
Parking lot is very small, based on project experience

Vehicle Trips - Based on Engineering estimates

Road Dust - Based on engineering estimates

Energy Use - Based on engineer estimates = 20,000 treatment plant 60,000 well sites = 80,000 sqft

Water And Wastewater - No additional water use needed

Solid Waste - Brine disposal is covered in VMT

Construction Off-road Equipment Mitigation - Based on standard mitigation required by SCAQMD

Fleet Mix - Based on Engineerng estimates

Stationary Sources - Emergency Generators and Fire Pumps - Emergency generators for 6 well sites / treatment facility

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	51,120.00	3,000.00
tblArchitecturalCoating	EF_Residential_Interior	50.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Annual

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	132.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	35.00	29.00
tblConstructionPhase	NumDays	370.00	288.00
tblConstructionPhase	NumDays	20.00	331.00
tblConstructionPhase	NumDays	35.00	84.00
tblConstructionPhase	NumDays	370.00	265.00
tblConstructionPhase	NumDays	20.00	23.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	36.52	81.03
tblEnergyUse	NT24NG	48.51	0.00
tblEnergyUse	T24E	1.06	0.00
tblEnergyUse	T24NG	3.25	0.00
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	HHD	0.03	0.20
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDA	0.55	0.00

tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD1	0.02	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	LHD2	5.8470e-003	0.20
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MCY	4.8220e-003	0.00
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MDV	0.12	0.20
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MH	8.6900e-004	0.00
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	MHD	0.02	0.20
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00
tblFleetMix	OBUS	2.1100e-003	0.00

tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	SBUS	7.1000e-004	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblFleetMix	UBUS	1.7690e-003	0.00
tblOffRoadEquipment	HorsePower	158.00	97.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	467.38
tblRoadDust	MeanVehicleSpeed	40	15
tblSolidWaste	SolidWasteGenerationRate	75.20	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	115.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	24.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	27.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,406.00
tblTripsAndVMT	HaulingTripNumber	0.00	250.00
tblTripsAndVMT	HaulingTripNumber	0.00	87.00

tblTripsAndVMT	HaulingTripNumber	0.00	45.00
tblTripsAndVMT	VendorTripNumber	153.00	1.00
tblTripsAndVMT	VendorTripNumber	153.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00
tblTripsAndVMT	WorkerTripNumber	38.00	30.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblTripsAndVMT	WorkerTripNumber	391.00	15.00
tblTripsAndVMT	WorkerTripNumber	78.00	4.00
tblTripsAndVMT	WorkerTripNumber	38.00	19.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	38.00	0.00
tblTripsAndVMT	WorkerTripNumber	391.00	11.00
tblTripsAndVMT	WorkerTripNumber	20.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	0.00	41.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TL	16.60	72.00
tblVehicleTrips	CW_TTP	0.00	59.00

tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	0.00	3.00
tblVehicleTrips	PR_TP	0.00	92.00
tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	0.00	0.05
tblVehicleTrips	WD_TR	1.68	1.00
tblWater	IndoorWaterUseRate	18,500,000.00	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					
2021	0.7878	6.7756	4.7480	0.0100	1.6586	0.3252	1.9838	0.8801	0.3041	1.1842	0.0000	877.1288	877.1288	0.2140	0.0000	882.4778
2022	1.4568	10.1959	10.3097	0.0214	0.4698	0.4836	0.9534	0.1783	0.4590	0.6374	0.0000	1,858.0485	1,858.0485	0.4164	0.0000	1,868.4581
2023	0.0749	0.6367	0.7420	1.3900e-003	4.2400e-003	0.0305	0.0347	1.1200e-003	0.0289	0.0301	0.0000	119.8465	119.8465	0.0253	0.0000	120.4778
Maximum	**1.4568**	**10.1959**	**10.3097**	**0.0214**	**1.6586**	**0.4836**	**1.9838**	**0.8801**	**0.4590**	**1.1842**	**0.0000**	**1,858.0485**	**1,858.0485**	**0.4164**	**0.0000**	**1,868.4581**

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	0.6048	5.2014	4.8441	0.0100	0.7385	0.2224	0.9609	0.3841	0.2052	0.5893	0.0000	877.1278	877.1278	0.2140	0.0000	882.4768
2022	0.9483	5.8707	10.6019	0.0214	0.2612	0.2230	0.4843	0.0919	0.2064	0.2983	0.0000	1,858.0464	1,858.0464	0.4164	0.0000	1,868.4559
2023	0.0344	0.2846	0.7665	1.3900e-003	4.2400e-003	0.0105	0.0147	1.1200e-003	9.7300e-003	0.0109	0.0000	119.8463	119.8463	0.0253	0.0000	120.4776
Maximum	**0.9483**	**5.8707**	**10.6019**	**0.0214**	**0.7385**	**0.2230**	**0.9609**	**0.3841**	**0.2064**	**0.5893**	**0.0000**	**1,858.0464**	**1,858.0464**	**0.4164**	**0.0000**	**1,868.4559**

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, 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	**31.56**	**35.50**	**-2.61**	**0.00**	**52.92**	**45.67**	**50.88**	**54.98**	**46.80**	**51.48**	**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**	3.8660	3.2526
2	**10-1-2021**	**12-31-2021**	3.6238	2.4887
3	**1-1-2022**	**3-31-2022**	5.9676	4.0832
4	**4-1-2022**	**6-30-2022**	2.2167	1.0900
5	**7-1-2022**	**9-30-2022**	1.9409	0.9454
6	**10-1-2022**	**12-31-2022**	1.5372	0.7068
7	**1-1-2023**	**3-31-2023**	0.7039	0.3156
		Highest	5.9676	4.0832

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Mobile	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Stationary	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4745**	**1.2691**	**0.8825**	**8.9300e-003**	**0.3988**	**8.2700e-003**	**0.4071**	**0.1128**	**7.9700e-003**	**0.1208**	**0.0000**	**2,264.0445**	**2,264.0445**	**0.1155**	**0.0182**	**2,272.3441**

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Mobile	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Stationary	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4745**	**1.2691**	**0.8825**	**8.9300e-003**	**0.3988**	**8.2700e-003**	**0.4071**	**0.1128**	**7.9700e-003**	**0.1208**	**0.0000**	**2,264.0445**	**2,264.0445**	**0.1155**	**0.0182**	**2,272.3441**

	ROG	NOx	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

Cactus Corridor Model Run with Tier 4 Engines - South Coast Air Basin, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Sites - Site Prep	Site Preparation	7/1/2021	12/31/2021	5	132	
2	Treatment Plants - Site Prep	Site Preparation	7/1/2021	8/13/2021	5	32	
3	Pipeline - Trenching	Trenching	7/1/2021	5/2/2022	5	218	
4	Treatment Plants - Grading	Grading	8/16/2021	9/23/2021	5	29	
5	Treatment Plants - Building Construction	Building Construction	9/24/2021	11/1/2022	5	288	
6	Treatment Plants - Architectural Coating	Architectural Coating	9/24/2021	12/30/2022	5	331	
7	Well Sites - Well Drilling	Grading	1/3/2022	3/27/2022	7	84	
8	Well Sites - Pump installation/construction	Building Construction	3/28/2022	3/31/2023	5	265	
9	Treatment Plants - Paving	Paving	11/2/2022	12/2/2022	5	23	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 19.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 120,000; Non-Residential Outdoor: 40,000; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Sites - Site Prep	Off-Highway Trucks	1	2.00	97	0.37
Well Sites - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Well Sites - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Site Prep	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Site Prep	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Site Prep	Rubber Tired Dozers	3	8.00	247	0.40

Treatment Plants - Site Prep	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline - Trenching	Air Compressors	1	6.00	78	0.48
Pipeline - Trenching	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline - Trenching	Cranes	1	4.00	231	0.29
Pipeline - Trenching	Dumpers/Tenders	2	6.00	16	0.38
Pipeline - Trenching	Excavators	1	6.00	158	0.38
Pipeline - Trenching	Generator Sets	1	6.00	84	0.74
Pipeline - Trenching	Off-Highway Trucks	1	2.00	402	0.38
Pipeline - Trenching	Off-Highway Trucks	1	4.00	402	0.38
Pipeline - Trenching	Pavers	1	6.00	130	0.42
Pipeline - Trenching	Pumps	1	6.00	84	0.74
Pipeline - Trenching	Sweepers/Scrubbers	1	6.00	64	0.46
Pipeline - Trenching	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline - Trenching	Welders	1	6.00	46	0.45
Treatment Plants - Grading	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Grading	Excavators	2	8.00	158	0.38
Treatment Plants - Grading	Graders	1	8.00	187	0.41
Treatment Plants - Grading	Off-Highway Trucks	1	2.00	402	0.38
Treatment Plants - Grading	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Grading	Rubber Tired Dozers	1	8.00	247	0.40
Treatment Plants - Grading	Scrapers	2	8.00	367	0.48
Treatment Plants - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Treatment Plants - Building Construction	Air Compressors	1	6.00	78	0.48
Treatment Plants - Building Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Treatment Plants - Building Construction	Cranes	1	7.00	231	0.29
Treatment Plants - Building Construction	Excavators	2	6.00	97	0.37

Treatment Plants - Building Construction	Forklifts	3	8.00	89	0.20
Treatment Plants - Building Construction	Forklifts	2	6.00	89	0.20
Treatment Plants - Building Construction	Generator Sets	1	8.00	84	0.74
Treatment Plants - Building Construction	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Building Construction	Pumps	1	6.00	84	0.74
Treatment Plants - Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Treatment Plants - Building Construction	Welders	1	6.00	46	0.45
Treatment Plants - Architectural Coating	Air Compressors	1	6.00	78	0.48
Treatment Plants - Architectural Coating	Generator Sets	1	6.00	84	0.74
Treatment Plants - Architectural Coating	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Well Drilling	Air Compressors	1	18.00	78	0.48
Well Sites - Well Drilling	Bore/Drill Rigs	1	24.00	221	0.50
Well Sites - Well Drilling	Cranes	1	24.00	231	0.29
Well Sites - Well Drilling	Excavators	2	8.00	158	0.38
Well Sites - Well Drilling	Generator Sets	1	18.00	84	0.74
Well Sites - Well Drilling	Graders	1	8.00	187	0.41
Well Sites - Well Drilling	Off-Highway Trucks	1	12.00	402	0.38
Well Sites - Well Drilling	Pumps	1	18.00	84	0.74
Well Sites - Well Drilling	Rubber Tired Dozers	1	8.00	247	0.40
Well Sites - Well Drilling	Scrapers	2	8.00	367	0.48
Well Sites - Well Drilling	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Sites - Well Drilling	Welders	1	18.00	46	0.45
Well Sites - Pump installation/construction	Air Compressors	1	6.00	78	0.48
Well Sites - Pump installation/construction	Cranes	1	7.00	231	0.29

Well Sites - Pump installation/construction	Forklifts	3	8.00	89	0.20
Well Sites - Pump installation/construction	Generator Sets	1	8.00	84	0.74
Well Sites - Pump installation/construction	Off-Highway Trucks	1	4.00	402	0.38
Well Sites - Pump installation/construction	Pumps	1	6.00	84	0.74
Well Sites - Pump installation/construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Well Sites - Pump installation/construction	Welders	1	8.00	46	0.45
Treatment Plants - Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Treatment Plants - Paving	Off-Highway Trucks	1	4.00	402	0.38
Treatment Plants - Paving	Pavers	2	8.00	130	0.42
Treatment Plants - Paving	Paving Equipment	2	8.00	132	0.36
Treatment Plants - Paving	Rollers	2	8.00	80	0.38

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
Well Sites - Site Prep	6	8.00	0.00	27.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Site Prep	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline - Trenching	15	30.00	0.00	1,406.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Grading	10	10.00	0.00	250.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Building Construction	16	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Architectural Coating	3	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	19.00	0.00	87.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Well Drilling	15	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Sites - Pump installation/constructio	12	11.00	0.00	45.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Treatment Plants - Paving	8	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Well Sites - Site Prep - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.1924	0.0000	1.1924	0.6554	0.0000	0.6554	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2395	2.4711	1.0676	2.3300e-003		0.1192	0.1192		0.1096	0.1096	0.0000	204.9026	204.9026	0.0663	0.0000	206.5593
Total	**0.2395**	**2.4711**	**1.0676**	**2.3300e-003**	**1.1924**	**0.1192**	**1.3115**	**0.6554**	**0.1096**	**0.7651**	**0.0000**	**204.9026**	**204.9026**	**0.0663**	**0.0000**	**206.5593**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	3.6100e-003	8.0000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0131	1.0131	7.0000e-005	0.0000	1.0150
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	2.1900e-003	1.6300e-003	0.0184	6.0000e-005	5.7900e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0511	5.0511	1.4000e-004	0.0000	5.0545
Total	**2.2900e-003**	**5.2400e-003**	**0.0192**	**7.0000e-005**	**6.0200e-003**	**5.0000e-005**	**6.0800e-003**	**1.6000e-003**	**5.0000e-005**	**1.6500e-003**	**0.0000**	**6.0643**	**6.0643**	**2.1000e-004**	**0.0000**	**6.0695**

3.2 Well Sites - Site Prep - 2021

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					0.5097	0.0000	0.5097	0.2802	0.0000	0.2802	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2314	2.3763	1.0721	2.3300e-003		0.1133	0.1133		0.1043	0.1043	0.0000	204.9023	204.9023	0.0663	0.0000	206.5591
Total	**0.2314**	**2.3763**	**1.0721**	**2.3300e-003**	**0.5097**	**0.1133**	**0.6231**	**0.2802**	**0.1043**	**0.3845**	**0.0000**	**204.9023**	**204.9023**	**0.0663**	**0.0000**	**206.5591**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-004	3.6100e-003	8.0000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0131	1.0131	7.0000e-005	0.0000	1.0150
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	2.1900e-003	1.6300e-003	0.0184	6.0000e-005	5.7900e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0511	5.0511	1.4000e-004	0.0000	5.0545
Total	**2.2900e-003**	**5.2400e-003**	**0.0192**	**7.0000e-005**	**6.0200e-003**	**5.0000e-005**	**6.0800e-003**	**1.6000e-003**	**5.0000e-005**	**1.6500e-003**	**0.0000**	**6.0643**	**6.0643**	**2.1000e-004**	**0.0000**	**6.0695**

3.3 Treatment Plants - Site Prep - 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					0.2891	0.0000	0.2891	0.1589	0.0000	0.1589	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0605	0.6201	0.2732	6.2000e-004		0.0297	0.0297		0.0273	0.0273	0.0000	54.3128	54.3128	0.0176	0.0000	54.7519
Total	**0.0605**	**0.6201**	**0.2732**	**6.2000e-004**	**0.2891**	**0.0297**	**0.3187**	**0.1589**	**0.0273**	**0.1862**	**0.0000**	**54.3128**	**54.3128**	**0.0176**	**0.0000**	**54.7519**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.9000e-004	4.4700e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2245	1.2245	3.0000e-005	0.0000	1.2253
Total	**5.3000e-004**	**3.9000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2245**	**1.2245**	**3.0000e-005**	**0.0000**	**1.2253**

3.3 Treatment Plants - Site Prep - 2021

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					0.1236	0.0000	0.1236	0.0679	0.0000	0.0679	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0585	0.5971	0.2743	6.2000e-004		0.0283	0.0283		0.0260	0.0260	0.0000	54.3127	54.3127	0.0176	0.0000	54.7519
Total	**0.0585**	**0.5971**	**0.2743**	**6.2000e-004**	**0.1236**	**0.0283**	**0.1518**	**0.0679**	**0.0260**	**0.0939**	**0.0000**	**54.3127**	**54.3127**	**0.0176**	**0.0000**	**54.7519**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	3.9000e-004	4.4700e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.2245	1.2245	3.0000e-005	0.0000	1.2253
Total	**5.3000e-004**	**3.9000e-004**	**4.4700e-003**	**1.0000e-005**	**1.4000e-003**	**1.0000e-005**	**1.4100e-003**	**3.7000e-004**	**1.0000e-005**	**3.8000e-004**	**0.0000**	**1.2245**	**1.2245**	**3.0000e-005**	**0.0000**	**1.2253**

3.4 Pipeline - Trenching - 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	0.1893	1.6326	1.6492	3.1200e-003		0.0833	0.0833		0.0796	0.0796	0.0000	269.3262	269.3262	0.0576	0.0000	270.7668
Total	**0.1893**	**1.6326**	**1.6492**	**3.1200e-003**		**0.0833**	**0.0833**		**0.0796**	**0.0796**	**0.0000**	**269.3262**	**269.3262**	**0.0576**	**0.0000**	**270.7668**

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	3.2700e-003	0.1139	0.0251	3.2000e-004	0.0109	3.5000e-004	0.0113	2.8900e-003	3.3000e-004	3.2200e-003	0.0000	31.9454	31.9454	2.3000e-003	0.0000	32.0030
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	8.2300e-003	6.1100e-003	0.0691	2.1000e-004	0.0217	1.6000e-004	0.0219	5.7700e-003	1.5000e-004	5.9200e-003	0.0000	18.9417	18.9417	5.1000e-004	0.0000	18.9545
Total	**0.0115**	**0.1200**	**0.0942**	**5.3000e-004**	**0.0326**	**5.1000e-004**	**0.0331**	**8.6600e-003**	**4.8000e-004**	**9.1400e-003**	**0.0000**	**50.8871**	**50.8871**	**2.8100e-003**	**0.0000**	**50.9574**

3.4 Pipeline - Trenching - 2021

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	0.0882	0.8012	1.7202	3.1200e-003		0.0275	0.0275		0.0257	0.0257	0.0000	269.3259	269.3259	0.0576	0.0000	270.7665
Total	**0.0882**	**0.8012**	**1.7202**	**3.1200e-003**		**0.0275**	**0.0275**		**0.0257**	**0.0257**	**0.0000**	**269.3259**	**269.3259**	**0.0576**	**0.0000**	**270.7665**

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	3.2700e-003	0.1139	0.0251	3.2000e-004	0.0109	3.5000e-004	0.0113	2.8900e-003	3.3000e-004	3.2200e-003	0.0000	31.9454	31.9454	2.3000e-003	0.0000	32.0030
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	8.2300e-003	6.1100e-003	0.0691	2.1000e-004	0.0217	1.6000e-004	0.0219	5.7700e-003	1.5000e-004	5.9200e-003	0.0000	18.9417	18.9417	5.1000e-004	0.0000	18.9545
Total	**0.0115**	**0.1200**	**0.0942**	**5.3000e-004**	**0.0326**	**5.1000e-004**	**0.0331**	**8.6600e-003**	**4.8000e-004**	**9.1400e-003**	**0.0000**	**50.8871**	**50.8871**	**2.8100e-003**	**0.0000**	**50.9574**

3.4 Pipeline - Trenching - 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	0.1111	0.9289	1.0591	2.0400e-003		0.0454	0.0454		0.0435	0.0435	0.0000	175.5058	175.5058	0.0373	0.0000	176.4374
Total	**0.1111**	**0.9289**	**1.0591**	**2.0400e-003**		**0.0454**	**0.0454**		**0.0435**	**0.0435**	**0.0000**	**175.5058**	**175.5058**	**0.0373**	**0.0000**	**176.4374**

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	2.0300e-003	0.0686	0.0162	2.1000e-004	0.0103	2.0000e-004	0.0105	2.6600e-003	1.9000e-004	2.8500e-003	0.0000	20.5636	20.5636	1.4800e-003	0.0000	20.6006
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.5900e-003	0.0416	1.3000e-004	0.0142	1.0000e-004	0.0143	3.7600e-003	1.0000e-004	3.8500e-003	0.0000	11.8988	11.8988	3.0000e-004	0.0000	11.9063
Total	**7.0700e-003**	**0.0722**	**0.0577**	**3.4000e-004**	**0.0244**	**3.0000e-004**	**0.0247**	**6.4200e-003**	**2.9000e-004**	**6.7000e-003**	**0.0000**	**32.4624**	**32.4624**	**1.7800e-003**	**0.0000**	**32.5068**

3.4 Pipeline - Trenching - 2022

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	0.0530	0.4529	1.1101	2.0400e-003		0.0151	0.0151		0.0141	0.0141	0.0000	175.5056	175.5056	0.0373	0.0000	176.4372
Total	**0.0530**	**0.4529**	**1.1101**	**2.0400e-003**		**0.0151**	**0.0151**		**0.0141**	**0.0141**	**0.0000**	**175.5056**	**175.5056**	**0.0373**	**0.0000**	**176.4372**

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	2.0300e-003	0.0686	0.0162	2.1000e-004	0.0103	2.0000e-004	0.0105	2.6600e-003	1.9000e-004	2.8500e-003	0.0000	20.5636	20.5636	1.4800e-003	0.0000	20.6006
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0400e-003	3.5900e-003	0.0416	1.3000e-004	0.0142	1.0000e-004	0.0143	3.7600e-003	1.0000e-004	3.8500e-003	0.0000	11.8988	11.8988	3.0000e-004	0.0000	11.9063
Total	**7.0700e-003**	**0.0722**	**0.0577**	**3.4000e-004**	**0.0244**	**3.0000e-004**	**0.0247**	**6.4200e-003**	**2.9000e-004**	**6.7000e-003**	**0.0000**	**32.4624**	**32.4624**	**1.7800e-003**	**0.0000**	**32.5068**

3.5 Treatment Plants - 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					0.1258	0.0000	0.1258	0.0522	0.0000	0.0522	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0653	0.7066	0.4575	1.0100e-003		0.0294	0.0294		0.0271	0.0271	0.0000	88.1715	88.1715	0.0284	0.0000	88.8816
Total	**0.0653**	**0.7066**	**0.4575**	**1.0100e-003**	**0.1258**	**0.0294**	**0.1552**	**0.0522**	**0.0271**	**0.0792**	**0.0000**	**88.1715**	**88.1715**	**0.0284**	**0.0000**	**88.8816**

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	0.0334	7.3600e-003	1.0000e-004	2.1500e-003	1.0000e-004	2.2500e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	9.3809	9.3809	6.8000e-004	0.0000	9.3978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	5.0600e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3872	1.3872	4.0000e-005	0.0000	1.3881
Total	**1.5600e-003**	**0.0339**	**0.0124**	**1.2000e-004**	**3.7400e-003**	**1.1000e-004**	**3.8500e-003**	**1.0100e-003**	**1.1000e-004**	**1.1200e-003**	**0.0000**	**10.7681**	**10.7681**	**7.2000e-004**	**0.0000**	**10.7859**

3.5 Treatment Plants - Grading - 2021

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					0.0538	0.0000	0.0538	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0629	0.6817	0.4552	1.0100e-003		0.0280	0.0280		0.0258	0.0258	0.0000	88.1713	88.1713	0.0284	0.0000	88.8815
Total	**0.0629**	**0.6817**	**0.4552**	**1.0100e-003**	**0.0538**	**0.0280**	**0.0817**	**0.0223**	**0.0258**	**0.0480**	**0.0000**	**88.1713**	**88.1713**	**0.0284**	**0.0000**	**88.8815**

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	0.0334	7.3600e-003	1.0000e-004	2.1500e-003	1.0000e-004	2.2500e-003	5.9000e-004	1.0000e-004	6.9000e-004	0.0000	9.3809	9.3809	6.8000e-004	0.0000	9.3978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	4.5000e-004	5.0600e-003	2.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3872	1.3872	4.0000e-005	0.0000	1.3881
Total	**1.5600e-003**	**0.0339**	**0.0124**	**1.2000e-004**	**3.7400e-003**	**1.1000e-004**	**3.8500e-003**	**1.0100e-003**	**1.1000e-004**	**1.1200e-003**	**0.0000**	**10.7681**	**10.7681**	**7.2000e-004**	**0.0000**	**10.7859**

3.6 Treatment Plants - 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	0.1054	0.9483	0.9192	1.6100e-003		0.0517	0.0517		0.0488	0.0488	0.0000	139.4572	139.4572	0.0321	0.0000	140.2583
Total	**0.1054**	**0.9483**	**0.9192**	**1.6100e-003**		**0.0517**	**0.0517**		**0.0488**	**0.0488**	**0.0000**	**139.4572**	**139.4572**	**0.0321**	**0.0000**	**140.2583**

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	1.0000e-004	3.4500e-003	8.7000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8620	0.8620	6.0000e-005	0.0000	0.8634
Worker	2.2100e-003	1.6400e-003	0.0186	6.0000e-005	5.8400e-003	4.0000e-005	5.8900e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.0942	5.0942	1.4000e-004	0.0000	5.0976
Total	**2.3100e-003**	**5.0900e-003**	**0.0195**	**7.0000e-005**	**6.0600e-003**	**5.0000e-005**	**6.1200e-003**	**1.6100e-003**	**5.0000e-005**	**1.6600e-003**	**0.0000**	**5.9561**	**5.9561**	**2.0000e-004**	**0.0000**	**5.9610**

3.6 Treatment Plants - Building Construction - 2021

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	0.0505	0.4745	0.9306	1.6100e-003		0.0208	0.0208		0.0193	0.0193	0.0000	139.4570	139.4570	0.0321	0.0000	140.2582
Total	**0.0505**	**0.4745**	**0.9306**	**1.6100e-003**		**0.0208**	**0.0208**		**0.0193**	**0.0193**	**0.0000**	**139.4570**	**139.4570**	**0.0321**	**0.0000**	**140.2582**

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	1.0000e-004	3.4500e-003	8.7000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8620	0.8620	6.0000e-005	0.0000	0.8634
Worker	2.2100e-003	1.6400e-003	0.0186	6.0000e-005	5.8400e-003	4.0000e-005	5.8900e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.0942	5.0942	1.4000e-004	0.0000	5.0976
Total	**2.3100e-003**	**5.0900e-003**	**0.0195**	**7.0000e-005**	**6.0600e-003**	**5.0000e-005**	**6.1200e-003**	**1.6100e-003**	**5.0000e-005**	**1.6600e-003**	**0.0000**	**5.9561**	**5.9561**	**2.0000e-004**	**0.0000**	**5.9610**

3.6 Treatment Plants - 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	0.2907	2.5779	2.7703	4.9400e-003		0.1337	0.1337		0.1265	0.1265	0.0000	426.3018	426.3018	0.0973	0.0000	428.7350
Total	**0.2907**	**2.5779**	**2.7703**	**4.9400e-003**		**0.1337**	**0.1337**		**0.1265**	**0.1265**	**0.0000**	**426.3018**	**426.3018**	**0.0973**	**0.0000**	**428.7350**

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	2.9000e-004	0.0100	2.5300e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.0000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6112	2.6112	1.6000e-004	0.0000	2.6153
Worker	6.3500e-003	4.5300e-003	0.0525	1.7000e-004	0.0179	1.3000e-004	0.0180	4.7400e-003	1.2000e-004	4.8600e-003	0.0000	15.0118	15.0118	3.8000e-004	0.0000	15.0213
Total	**6.6400e-003**	**0.0145**	**0.0550**	**2.0000e-004**	**0.0185**	**1.5000e-004**	**0.0187**	**4.9400e-003**	**1.4000e-004**	**5.0800e-003**	**0.0000**	**17.6230**	**17.6230**	**5.4000e-004**	**0.0000**	**17.6366**

3.6 Treatment Plants - Building Construction - 2022

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	0.1414	1.2720	2.8180	4.9400e-003		0.0541	0.0541		0.0501	0.0501	0.0000	426.3013	426.3013	0.0973	0.0000	428.7345
Total	**0.1414**	**1.2720**	**2.8180**	**4.9400e-003**		**0.0541**	**0.0541**		**0.0501**	**0.0501**	**0.0000**	**426.3013**	**426.3013**	**0.0973**	**0.0000**	**428.7345**

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	2.9000e-004	0.0100	2.5300e-003	3.0000e-005	6.8000e-004	2.0000e-005	7.0000e-004	2.0000e-004	2.0000e-005	2.2000e-004	0.0000	2.6112	2.6112	1.6000e-004	0.0000	2.6153
Worker	6.3500e-003	4.5300e-003	0.0525	1.7000e-004	0.0179	1.3000e-004	0.0180	4.7400e-003	1.2000e-004	4.8600e-003	0.0000	15.0118	15.0118	3.8000e-004	0.0000	15.0213
Total	**6.6400e-003**	**0.0145**	**0.0550**	**2.0000e-004**	**0.0185**	**1.5000e-004**	**0.0187**	**4.9400e-003**	**1.4000e-004**	**5.0800e-003**	**0.0000**	**17.6230**	**17.6230**	**5.4000e-004**	**0.0000**	**17.6366**

3.7 Treatment Plants - Architectural Coating - 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					
Archit. Coating	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0280	0.2319	0.2266	5.2000e-004		0.0112	0.0112		0.0110	0.0110	0.0000	44.7002	44.7002	8.0500e-003	0.0000	44.9014
Total	**0.1091**	**0.2319**	**0.2266**	**5.2000e-004**		**0.0112**	**0.0112**		**0.0110**	**0.0110**	**0.0000**	**44.7002**	**44.7002**	**8.0500e-003**	**0.0000**	**44.9014**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.4000e-004	4.9600e-003	2.0000e-005	1.5600e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3594
Total	**5.9000e-004**	**4.4000e-004**	**4.9600e-003**	**2.0000e-005**	**1.5600e-003**	**1.0000e-005**	**1.5700e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.3585**	**1.3585**	**4.0000e-005**	**0.0000**	**1.3594**

3.7 Treatment Plants - Architectural Coating - 2021

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	0.0810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1056	0.2370	5.2000e-004		3.8000e-003	3.8000e-003		3.5300e-003	3.5300e-003	0.0000	44.7001	44.7001	8.0500e-003	0.0000	44.9013
Total	**0.0946**	**0.1056**	**0.2370**	**5.2000e-004**		**3.8000e-003**	**3.8000e-003**		**3.5300e-003**	**3.5300e-003**	**0.0000**	**44.7001**	**44.7001**	**8.0500e-003**	**0.0000**	**44.9013**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.4000e-004	4.9600e-003	2.0000e-005	1.5600e-003	1.0000e-005	1.5700e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.3585	1.3585	4.0000e-005	0.0000	1.3594
Total	**5.9000e-004**	**4.4000e-004**	**4.9600e-003**	**2.0000e-005**	**1.5600e-003**	**1.0000e-005**	**1.5700e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.3585**	**1.3585**	**4.0000e-005**	**0.0000**	**1.3594**

3.7 Treatment Plants - 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	0.2967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0931	0.7295	0.8125	1.8900e-003		0.0344	0.0344		0.0337	0.0337	0.0000	163.7180	163.7180	0.0292	0.0000	164.4472
Total	**0.3898**	**0.7295**	**0.8125**	**1.8900e-003**		**0.0344**	**0.0344**		**0.0337**	**0.0337**	**0.0000**	**163.7180**	**163.7180**	**0.0292**	**0.0000**	**164.4472**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.4500e-003	0.0168	5.0000e-005	5.7100e-003	4.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5500e-003	0.0000	4.7964	4.7964	1.2000e-004	0.0000	4.7994
Total	**2.0300e-003**	**1.4500e-003**	**0.0168**	**5.0000e-005**	**5.7100e-003**	**4.0000e-005**	**5.7500e-003**	**1.5200e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**4.7964**	**4.7964**	**1.2000e-004**	**0.0000**	**4.7994**

3.7 Treatment Plants - Architectural Coating - 2022

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	0.2967					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0446	0.3054	0.8520	1.8900e-003		0.0109	0.0109		0.0101	0.0101	0.0000	163.7178	163.7178	0.0292	0.0000	164.4470
Total	**0.3413**	**0.3054**	**0.8520**	**1.8900e-003**		**0.0109**	**0.0109**		**0.0101**	**0.0101**	**0.0000**	**163.7178**	**163.7178**	**0.0292**	**0.0000**	**164.4470**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0300e-003	1.4500e-003	0.0168	5.0000e-005	5.7100e-003	4.0000e-005	5.7500e-003	1.5200e-003	4.0000e-005	1.5500e-003	0.0000	4.7964	4.7964	1.2000e-004	0.0000	4.7994
Total	**2.0300e-003**	**1.4500e-003**	**0.0168**	**5.0000e-005**	**5.7100e-003**	**4.0000e-005**	**5.7500e-003**	**1.5200e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**4.7964**	**4.7964**	**1.2000e-004**	**0.0000**	**4.7994**

3.8 Well Sites - Well Drilling - 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					0.3643	0.0000	0.3643	0.1511	0.0000	0.1511	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3771	3.5701	3.0158	7.2200e-003		0.1539	0.1539		0.1451	0.1451	0.0000	627.2268	627.2268	0.1616	0.0000	631.2678
Total	**0.3771**	**3.5701**	**3.0158**	**7.2200e-003**	**0.3643**	**0.1539**	**0.5181**	**0.1511**	**0.1451**	**0.2962**	**0.0000**	**627.2268**	**627.2268**	**0.1616**	**0.0000**	**631.2678**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0108	2.5300e-003	3.0000e-005	3.0000e-003	3.0000e-005	3.0300e-003	7.6000e-004	3.0000e-005	7.9000e-004	0.0000	3.2255	3.2255	2.3000e-004	0.0000	3.2313
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	3.1100e-003	2.2200e-003	0.0257	8.0000e-005	0.0391	6.0000e-005	0.0392	9.7800e-003	6.0000e-005	9.8400e-003	0.0000	7.3607	7.3607	1.9000e-004	0.0000	7.3653
Total	**3.4300e-003**	**0.0130**	**0.0283**	**1.1000e-004**	**0.0421**	**9.0000e-005**	**0.0422**	**0.0105**	**9.0000e-005**	**0.0106**	**0.0000**	**10.5861**	**10.5861**	**4.2000e-004**	**0.0000**	**10.5965**

3.8 Well Sites - Well Drilling - 2022

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					0.1557	0.0000	0.1557	0.0646	0.0000	0.0646	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2723	2.7567	3.0732	7.2200e-003		0.1054	0.1054		0.0972	0.0972	0.0000	627.2261	627.2261	0.1616	0.0000	631.2670
Total	**0.2723**	**2.7567**	**3.0732**	**7.2200e-003**	**0.1557**	**0.1054**	**0.2612**	**0.0646**	**0.0972**	**0.1618**	**0.0000**	**627.2261**	**627.2261**	**0.1616**	**0.0000**	**631.2670**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.2000e-004	0.0108	2.5300e-003	3.0000e-005	3.0000e-003	3.0000e-005	3.0300e-003	7.6000e-004	3.0000e-005	7.9000e-004	0.0000	3.2255	3.2255	2.3000e-004	0.0000	3.2313
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	3.1100e-003	2.2200e-003	0.0257	8.0000e-005	0.0391	6.0000e-005	0.0392	9.7800e-003	6.0000e-005	9.8400e-003	0.0000	7.3607	7.3607	1.9000e-004	0.0000	7.3653
Total	**3.4300e-003**	**0.0130**	**0.0283**	**1.1000e-004**	**0.0421**	**9.0000e-005**	**0.0422**	**0.0105**	**9.0000e-005**	**0.0106**	**0.0000**	**10.5861**	**10.5861**	**4.2000e-004**	**0.0000**	**10.5965**

3.9 Well Sites - Pump installation/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	0.2439	2.1258	2.2655	4.1400e-003		0.1081	0.1081		0.1027	0.1027	0.0000	357.6621	357.6621	0.0781	0.0000	359.6147
Total	**0.2439**	**2.1258**	**2.2655**	**4.1400e-003**		**0.1081**	**0.1081**		**0.1027**	**0.1027**	**0.0000**	**357.6621**	**357.6621**	**0.0781**	**0.0000**	**359.6147**

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	1.2000e-004	4.2000e-003	9.9000e-004	1.0000e-005	3.6000e-004	1.0000e-005	3.8000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.2591	1.2591	9.0000e-005	0.0000	1.2614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2900e-003	3.0700e-003	0.0355	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1463	10.1463	2.6000e-004	0.0000	10.1527
Total	**4.4100e-003**	**7.2700e-003**	**0.0364**	**1.2000e-004**	**0.0124**	**1.0000e-004**	**0.0125**	**3.3100e-003**	**9.0000e-005**	**3.4000e-003**	**0.0000**	**11.4054**	**11.4054**	**3.5000e-004**	**0.0000**	**11.4140**

3.9 Well Sites - Pump installation/construction - 2022

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	0.1063	0.9381	2.3343	4.1400e-003		0.0357	0.0357		0.0331	0.0331	0.0000	357.6617	357.6617	0.0781	0.0000	359.6143
Total	**0.1063**	**0.9381**	**2.3343**	**4.1400e-003**		**0.0357**	**0.0357**		**0.0331**	**0.0331**	**0.0000**	**357.6617**	**357.6617**	**0.0781**	**0.0000**	**359.6143**

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	1.2000e-004	4.2000e-003	9.9000e-004	1.0000e-005	3.6000e-004	1.0000e-005	3.8000e-004	1.0000e-004	1.0000e-005	1.1000e-004	0.0000	1.2591	1.2591	9.0000e-005	0.0000	1.2614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2900e-003	3.0700e-003	0.0355	1.1000e-004	0.0121	9.0000e-005	0.0122	3.2100e-003	8.0000e-005	3.2900e-003	0.0000	10.1463	10.1463	2.6000e-004	0.0000	10.1527
Total	**4.4100e-003**	**7.2700e-003**	**0.0364**	**1.2000e-004**	**0.0124**	**1.0000e-004**	**0.0125**	**3.3100e-003**	**9.0000e-005**	**3.4000e-003**	**0.0000**	**11.4054**	**11.4054**	**3.5000e-004**	**0.0000**	**11.4140**

3.9 Well Sites - Pump installation/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	0.0735	0.6349	0.7310	1.3500e-003		0.0304	0.0304		0.0289	0.0289	0.0000	116.2794	116.2794	0.0252	0.0000	116.9081
Total	**0.0735**	**0.6349**	**0.7310**	**1.3500e-003**		**0.0304**	**0.0304**		**0.0289**	**0.0289**	**0.0000**	**116.2794**	**116.2794**	**0.0252**	**0.0000**	**116.9081**

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	3.0000e-005	8.7000e-004	2.9000e-004	0.0000	3.1000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3925	0.3925	3.0000e-005	0.0000	0.3931
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	1.3100e-003	9.0000e-004	0.0106	4.0000e-005	3.9200e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.1747	3.1747	7.0000e-005	0.0000	3.1765
Total	**1.3400e-003**	**1.7700e-003**	**0.0109**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2700e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.5671**	**3.5671**	**1.0000e-004**	**0.0000**	**3.5697**

3.9 Well Sites - Pump installation/construction - 2023

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	0.0331	0.2828	0.7556	1.3500e-003		0.0104	0.0104		9.7000e-003	9.7000e-003	0.0000	116.2792	116.2792	0.0252	0.0000	116.9080
Total	**0.0331**	**0.2828**	**0.7556**	**1.3500e-003**		**0.0104**	**0.0104**		**9.7000e-003**	**9.7000e-003**	**0.0000**	**116.2792**	**116.2792**	**0.0252**	**0.0000**	**116.9080**

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	3.0000e-005	8.7000e-004	2.9000e-004	0.0000	3.1000e-004	0.0000	3.2000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.3925	0.3925	3.0000e-005	0.0000	0.3931
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	1.3100e-003	9.0000e-004	0.0106	4.0000e-005	3.9200e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.1747	3.1747	7.0000e-005	0.0000	3.1765
Total	**1.3400e-003**	**1.7700e-003**	**0.0109**	**4.0000e-005**	**4.2300e-003**	**3.0000e-005**	**4.2700e-003**	**1.1200e-003**	**3.0000e-005**	**1.1500e-003**	**0.0000**	**3.5671**	**3.5671**	**1.0000e-004**	**0.0000**	**3.5697**

3.10 Treatment Plants - 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	0.0164	0.1553	0.1905	3.5000e-004		7.5300e-003	7.5300e-003		6.9500e-003	6.9500e-003	0.0000	30.2303	30.2303	9.6600e-003	0.0000	30.4718
Paving	4.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0204**	**0.1553**	**0.1905**	**3.5000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9500e-003**	**6.9500e-003**	**0.0000**	**30.2303**	**30.2303**	**9.6600e-003**	**0.0000**	**30.4718**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8500e-003	1.0000e-005	2.2700e-003	0.0000	2.2800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.5304	0.5304	1.0000e-005	0.0000	0.5307
Total	**2.2000e-004**	**1.6000e-004**	**1.8500e-003**	**1.0000e-005**	**2.2700e-003**	**0.0000**	**2.2800e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.5304**	**0.5304**	**1.0000e-005**	**0.0000**	**0.5307**

3.10 Treatment Plants - Paving - 2022

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	6.2600e-003	0.0371	0.2182	3.5000e-004		1.2700e-003	1.2700e-003		1.2000e-003	1.2000e-003	0.0000	30.2303	30.2303	9.6600e-003	0.0000	30.4718
Paving	4.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.0371**	**0.2182**	**3.5000e-004**		**1.2700e-003**	**1.2700e-003**		**1.2000e-003**	**1.2000e-003**	**0.0000**	**30.2303**	**30.2303**	**9.6600e-003**	**0.0000**	**30.4718**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8500e-003	1.0000e-005	2.2700e-003	0.0000	2.2800e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.5304	0.5304	1.0000e-005	0.0000	0.5307
Total	**2.2000e-004**	**1.6000e-004**	**1.8500e-003**	**1.0000e-005**	**2.2700e-003**	**0.0000**	**2.2800e-003**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**0.0000**	**0.5304**	**0.5304**	**1.0000e-005**	**0.0000**	**0.5307**

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	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220
Unmitigated	0.0667	1.2310	0.8213	8.8600e-003	0.3988	6.2300e-003	0.4051	0.1128	5.9300e-003	0.1187	0.0000	843.2514	843.2514	0.0268	0.0000	843.9220

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	35.95	0.00	0.00	110,051	110,051
Refrigerated Warehouse-No Rail	20.00	0.00	0.00	206,001	206,001
Refrigerated Warehouse-No Rail	60.00	0.00	0.00	618,003	618,003
Total	115.95	0.00	0.00	934,056	934,056

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
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3
Refrigerated Warehouse-No	72.00	0.00	0.00	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Non-Asphalt Surfaces	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	0.000000	0.000000	0.000000	0.000000	0.000000
Refrigerated Warehouse-No Rail	0.000000	0.000000	0.000000	0.200000	0.200000	0.200000	0.200000	0.200000	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	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,414.4640	1,414.4640	0.0878	0.0182	1,422.0693
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					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 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					
Other 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
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
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	1.668e+006	353.6160	0.0219	4.5400e-003	355.5173
Refrigerated Warehouse-No Rail	5.004e+006	1,060.8480	0.0658	0.0136	1,066.5520
Total		**1,414.4640**	**0.0878**	**0.0182**	**1,422.0693**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	1.668e+006	353.6160	0.0219	4.5400e-003	355.5173
Refrigerated Warehouse-No Rail	5.004e+006	1,060.8480	0.0658	0.0136	1,066.5520
Total		**1,414.4640**	**0.0878**	**0.0182**	**1,422.0693**

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	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Unmitigated	0.3942	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247

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	0.0489					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-003	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Total	**0.3942**	**1.1000e-004**	**0.0119**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**6.0000e-005**	**0.0000**	**0.0247**

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	0.0489					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3442					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-003	1.1000e-004	0.0119	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0231	0.0231	6.0000e-005	0.0000	0.0247
Total	**0.3942**	**1.1000e-004**	**0.0119**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.0231**	**0.0231**	**6.0000e-005**	**0.0000**	**0.0247**

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			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	6	0	24	115	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 (100 - 175 HP)	0.0136	0.0380	0.0493	7.0000e-005		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	6.3060	6.3060	8.8000e-004	0.0000	6.3281
Total	**0.0136**	**0.0380**	**0.0493**	**7.0000e-005**		**2.0000e-003**	**2.0000e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**6.3060**	**6.3060**	**8.8000e-004**	**0.0000**	**6.3281**

11.0 Vegetation

APPENDIX B: BIOLOGICAL RESOURCES ASSESSMENT

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Project No: 19-08223

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Woodard & Curran
9665 Chesapeake Drive, Suite 320
San Diego, California 92123

Subject: Biological Resources Assessment for the Cactus Avenue Corridor Project, Riverside County, California

Dear Ms. Prickett:

This report documents the findings of a Biological Resources Assessment conducted by Rincon Consultants, Inc. (Rincon), for the proposed Cactus Avenue Corridor Project ("project"). The Eastern Municipal Water District (EMWD) proposes the construction and operation of extraction wells, raw water and treated water pipelines, and a water treatment and blending plant at 11 locations throughout the city of Moreno Valley (City) in Riverside County, California. This assessment was completed to document existing site conditions via desktop analysis and field survey to determine potential impacts to sensitive biological resources for the approximately 6.3-mile long, 34.22-acre project. The report also contains the results of a habitat assessment for burrowing owl (*Athene cunicularia*; BUOW) and includes an analysis of potential project-related impacts to the study area. The study area includes the proposed limits of work (34.22-acre project site) and an additional 500-foot buffer around proposed extraction well and treatment plant locations for the BUOW habitat assessment.

Project Location and Description

The project site is located in the city of Moreno Valley in western Riverside County, California (Figure 1) in Township 3 south, Range 3 west, Sections 7, 8, and 17-21 of the United States Geological Survey (USGS) *Riverside East, CA* and *Sunnymead, CA* 7.5-minute topographic quadrangles (Figure 2). Proposed project elements include 11 lots totaling 34.22 acres with interconnecting pipelines spanning approximately 6.3 miles of developed area throughout the City. The site is generally characterized by vacant areas with surrounding lands used for residential, commercial, and light industrial purposes.

The proposed project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The project includes construction and operation of extraction wells, raw water and treated water pipelines, and a water treatment and blending plant. Descriptions of the various project elements are provided below.

Extraction Wells

Up to six extraction wells would be constructed as part of the project. EMWD has identified nine potential locations for the well sites. The extraction wells would be constructed in two phases: a well drilling phase and a well equipping phase. Construction of the extraction wells is expected to result in temporary disturbance of 100 percent of each of the six selected parcel sites. Each well site would be

designed to utilize the existing grade of the parcel where applicable. Each well would be constructed with an accompanying overflow (i.e., blow-off) pond. Portable, steel liquid container tanks (i.e., Baker Tanks) would be used for onsite dewatering clarification.

Pipelines

Approximately 30,000 linear feet of pipeline would be constructed to convey raw water from the extraction wells to the proposed treatment plant and to convey treated water to the distribution system. These pipelines would be located primarily within easements, roadway rights of way, and EMWD owned land. The project would include up to 2,650 linear feet of 30-inch pipeline to convey treated water from the central treatment and blending facility to the distribution system, and up to 30,400 linear feet of pipe to convey raw water from the extraction wells to the treatment and blending facility. The raw water pipeline would vary in diameter from 8-, 12- or 16-inch. Additionally, the project would involve installing approximately 100 linear feet of 18-inch pipe to discharge brackish water from the central treatment and blending facility to the sanitary sewer system. As a part of the proposed project, approximately 100 linear feet of 30-inch pipeline would be constructed between the Cactus II Feeder pipelines and the proposed treatment and blending plant facilities.

Pipelines would be installed using open cut trench construction, as well as trenchless boring techniques. Open cut excavation would be used in existing roadways, except at crossings of existing facilities, utilities, and storm channels. Pipelines installed using open cut methods would include a trenching depth of three to four feet. The estimated trench width would be equal to two feet plus the pipeline diameter, for a width of up to four feet. When trenchless techniques are required, pipelines would be constructed using “bore and jack” methods. For this construction method, pits would be dug on either side of the surface feature to be avoided (e.g., storm channel or existing utilities). The pits are typically 10-15 feet wide and 10-20 feet long for the receiving pit and up to 50 feet long for the jacking pit. The depth would depend on the feature to be avoided.

Treatment Plant

The proposed treatment plant would include granular activated carbon contactors, a blending facility, a potable water distribution pump station and a chlorine residual injection system. A nitrate treatment facility would also be constructed at the centralized treatment plant site to be used when blend water of sufficient quality is not available.

EMWD has identified two potential sites for the treatment plant. The raw water from the extraction wells would be treated and blended with imported water from Metropolitan Water District (MWD) to meet drinking water standards, and then delivered to a large diameter transmission pipeline in the potable water system that would convey the water to other parts of EMWD’s service area. The water would be disinfected prior to discharging into the potable water system.

Methodology

Regulatory Overview

Regulated or sensitive resources studied and analyzed herein include special status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and locally protected resources, such as protected trees.

Environmental Statutes

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Moreno Valley Municipal Code (City of Moreno Valley, 1997)
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)(2003)

Guidelines for Determining CEQA Significance

The following threshold criteria, as defined by the CEQA Guidelines Appendix G Initial Study Checklist, were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

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

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

c) *Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means.*

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

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

f) *Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan.*

Literature Review

Prior to the field visit, a literature review was conducted to establish the environmental and regulatory setting of the proposed project. The literature review included review of the U.S. Department of Agriculture (USDA) *Soil Survey for the Western Riverside Area* (2020a), *Riverside East, CA* and

Sunnymead, CA USGS 7.5-minute topographic quadrangles, literature detailing the habitat requirements of subject species, and aerial photographs (Google Earth 2020) and topographic maps (USGS 1979). The MSHCP, species accounts, and other reference materials were reviewed for habitat assessment requirements as well as habitat suitability elements for special status species. The primary objective of the habitat assessment was to evaluate the study area's potential to support special status species as well as to determine the applicability of other MSHCP and CEQA) requirements as they pertain to the proposed project.

The California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB; CDFW 2020a), Biogeographic Information and Observation System (BIOS; CDFW 2020b) and United States Fish and Wildlife Service (USFWS) Critical habitat Portal (USFWS 2020a) and Information, Planning, and Consultation (IPaC; USFWS 2020b) system were reviewed to determine if any special status wildlife, plant or vegetation communities were previously recorded within five miles of the study area. Map review of the U.S. Forestry Service (USFS) managed National Wild and Scenic River System was performed to assess whether wild or scenic rivers occurred on site (USFS 2020). The *National Wetlands Inventory* (NWI; USFWS 2020c) was reviewed to determine if any wetland and/or non-wetland waters had been previously documented and mapped on or in the vicinity of the proposed study area. Other resources reviewed included the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Plants of California* (2020), and CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (2020c).

Field Reconnaissance Survey

A field reconnaissance survey of the study area was conducted to document existing site conditions and the potential presence of sensitive biological resources, including sensitive plant and wildlife species, sensitive plant communities, jurisdictional waters and wetlands, and habitat for nesting birds. Rincon Senior Biologist Ryan Gilmore conducted the reconnaissance survey on January 20 and 21, 2020. The biologist surveyed the study area on foot and visually inspected the area with the aid of binoculars (8 x 40) as necessary.

Identification of potentially jurisdictional aquatic resources during the reconnaissance survey included any potential wetlands and non-wetland waters that may constitute waters of the U.S., waters of the State, streambeds, and/or riparian/riverine or vernal pool resources. During the survey, the biologist noted general site characteristics, documented vegetation, and took representative photographs (Appendix A). Survey conditions included a temperature of 64 degrees Fahrenheit (°F), clear skies, and winds of 0-3 miles per hour (mph).

BUOW Habitat Assessment

The BUOW habitat assessment and focused BUOW burrow survey were conducted on January 20 and 21, 2020 between the hours of 0700-1100. Rincon biologist, Ryan Gilmore, walked the entire study area (i.e., the 34.22-acre project site and 500-foot buffer, where accessible) to identify potential burrows and BUOW sign. Areas of particular interest included all topographic relief areas characterized by low growing vegetation, grasslands, shrub lands with low density shrub cover, earthen berms, and any large debris piles. Access to adjacent properties was not granted. Therefore, these areas were surveyed with binoculars to the maximum extent feasible from the edge of the project site boundary. The survey included a systematic search for burrows and BUOW sign by walking through potential habitat within the study area. Survey transects were spaced to allow 100 percent visual coverage of the ground

surface. The distance between transect center lines did not exceed 30 meters (approximately 100 feet) and were reduced to account for differences in terrain, vegetation density, and ground surface visibility. Burrow openings large enough to provide entry for BUOWs were carefully checked for prey remains, cast pellets, white-wash, feathers, or any other indication of BUOW presence. Potential burrows, BUOW individuals, and/or sign (if observed) were recorded and mapped using Global Positions System (GPS) coordinates.

Existing Conditions

Physical Characteristics

The study area is located in arid western Riverside County which is characterized by long, hot, dry summers and short, relatively wet winters. Average temperatures range from 65 to 96 degrees Fahrenheit (°F) during the summer and 41 to 65°F during the winter. The average annual precipitation in the region is 6-11 inches (United States Climate Data 2020).

Current land use at the project site consist of vacant areas and public parks. Areas of similar land use are located in the surrounding vicinity. The locations for the proposed extraction wells and treatment facilities include vacant lots adjacent to commercial and residential areas as well as Parque Amistad and Victoriano City-maintained public parks.

Rincon's biologist observed various levels of recent debris dumping (concrete and trash), large soil storage areas, small soil spoil piles, and homeless campsites throughout the entire study area.

Watershed and Drainages

The study area is within the approximate 2,650-square mile Santa Ana River Watershed. The Santa Ana River Watershed spans from portions of the San Jacinto Mountains, San Bernardino Mountains, San Gabriel Mountains, and Santa Ana Mountains, to the cities of Rialto, Lake Elsinore, Anaheim, Huntington Beach, and Irvine. Two major rivers drain the Santa Ana River watershed: the Santa Ana River and the San Jacinto River. A formal jurisdictional delineation of waters and wetlands was not completed as the project is not proposed to be located within potentially jurisdictional features.

The project site is underlain by moderately well-drained soils. The only area with evidence of standing water was observed at the Santiago Well Site/Treatment Site Option 3. This ponding was wholly contained within an onsite water detainment basin with no off-site connection.

Topography and Soils

Topography at the project site remains relatively level throughout the approximate 6.3-mile span of proposed pipeline that would traverse throughout the City. The elevation ranges from 1,500 feet above mean sea level (msl) in the southeast corner of the project site and gradually increases to approximately 1,600 feet above msl in the northeast corner. Additionally, locations where extraction wells and treatment sites are proposed consist of level terrain within vacant lots and public park spaces.

The National Resources Conservation Service (NRCS) Web Soil Survey identifies eleven soil map units within the project site (Figure 3a and Figure 3b) (NRCS 2020a). These eleven map units can be organized into six soil series that are described below. Based on Rincon's observations of soil surface conditions

during the reconnaissance survey, the soils on site are generally consistent with those mapped by the NRCS Web Soil Survey. No soils present at the project site are designated as hydric.

Greenfield Soils

Greenfield sandy loam with 0-2 percent slopes is found throughout the project site. This series consists of deep, well drained soils that formed in moderately coarse and coarse textured alluvium derived from granitic and mixed rock sources. Greenfield sandy loam is found on alluvial fans and terraces at elevations from 100 to 3,500 feet in dry, subhumid and mesothermal climates. It can be used for the production of a wide variety of irrigated field, forage, and fruit crops as well as for growing dryland grain and pasture. Vegetation on uncultivated areas consists of annual grass, forbs, shrubs, and scattered oak (*Quercus* sp.) trees.

Hanford Soils

Hanford coarse sandy loam with 0-8 percent slopes is found in the northern portion of the project site. Additionally, Hanford fine sandy loam with 0-2 percent slopes is found on the southern edge of the project site. This series consists of very deep, well drained soils that formed in moderately coarse textured alluvium dominantly from granite. Hanford soils are on stream bottoms, flood plains and alluvial fans from 150 to 3,500 feet in dry, subhumid and mesothermal climates. They are used for growing a wide range of fruits, vegetables, and general farm crops, as well as for urban development and dairies. Vegetation in uncultivated area is mainly annual grasses and associated herbaceous species.

Monserate Soils

Monserate sandy loam soil with 0-5 percent slopes is found in the northwestern portion of the project site. This soil series is a member of the fine-loamy, mixed, thermic family of Typic Durixeralfs. Typically, Monserate soils have brown and yellowish-red, slightly acidic, sandy loam A horizons, reddish brown, neutral, sandy clay loam B2t horizons underlain by silica-cemented duripans. This series is typically found on nearly-level to moderately-steep old dissected terraces and fans from 700 to 2,500 feet in dry, subhumid and mesothermal climates. This soil type is used principally for growing grain, grain hay or pasture, some citrus, and field and truck crops when irrigation water is available. Naturalized vegetation is mainly annual grasses and forbs, widely spaced native canyon oak (*Quercus* sp.), and shrubs on eroded slopes.

Pachappa Soils

Pachappa fine sandy loam with 0-2 percent slopes and 2-8 percent slopes, eroded is found on the northern reaches of the project site. The Pachappa series consists of well drained (minimal) Noncalcic Brown soils developed from moderately coarse textured alluvium. They occur on gently sloping alluvial fans and flood plains under annual grass-herb vegetation at elevations under 1,000 feet in a semiarid to dry subhumid mesothermal climate. Characteristically the Pachappa soils have grayish brown, slightly acid A1 horizons and brown, slightly finer textured neutral B2 horizons that overlie moderately alkaline, slightly calcareous B3ca horizons and very slightly calcareous stratified C horizons. This soil is mostly found under irrigation for alfalfa (*Medicago* sp.), small grains and row crops as well as dry farm small grains and normally generate good yields. Annual grasses, herbs, and shrubs are found growing on this soil.

Ramona Soils

Ramona soil is found in the northern portion of the project site, specifically, Ramona fine sandy loam with 0-2 percent slopes and Ramona very fine sandy loam with 0-8 percent slopes, eroded. The Ramona series is a member of the fine-loamy, mixed, thermic family of Typic Haploxeralfs. Typically, Ramona soils have brown, slightly and medium acid, sandy loam and fine sandy loam A horizons, reddish brown and yellowish red, slightly acid, sandy clay loam B2t horizons, and strong brown, neutral, fine sandy loam C horizons. This soil is found on nearly-level to moderately-steep terrace and fans derived from granitic and related rock sources at elevations of 250 to 3,500 feet in dry, subhumid and mesothermal climates. This soil type is mostly used for the production of grain, grain-hay, pasture, irrigated citrus (*Citrus* sp.), olives (*Olea* sp.), truck crops, and deciduous fruits. Uncultivated areas have a cover of annual grasses, forbs, chamise (*Adenostoma* sp.), or chaparral.

Domino Soils

Domino fine sandy loam with 0 to 2 percent slopes is mapped in the southeastern portion of the project site. The Domino Series consists of moderately deep, moderately well drained soils over lime-cemented hardpans. These soils are typically found on nearly level basin areas and toes of alluvial fans at elevations of 1,000 to 1,800 feet, usually with a semiarid climate. Domino soils typically support dry farmed grain and annual pasture, irrigated alfalfa, and salt-tolerant truck crops. Vegetation in uncultivated areas typically consists of saltgrass (*Distichlis spicata*), sedges, annual grasses, and forbs.

Vegetation Communities

One vegetation community, non-native annual grassland, and one land cover type, developed land, occur within the study area (Figure 4). A list of plant species observed within the study area is included as Appendix B.

Developed

Developed land cover is the dominant land cover type found at the project site and consists of development such as asphalt roads, graveled access roads, parking areas, and storage areas. These areas have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. This vegetation community consists of 345.70 acres, or approximately 94 percent, of the study area.

Non-Native Annual Grassland (42200)

Non-native annual grassland is the only vegetation community found within the project site. This community is typically dominated by a dense cover of annual grasses that usually include wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). On the project site, non-native annual grassland areas contained these annual grasses and also included Russian thistle (*Salsola tragus*), common fiddleneck (*Amsinckia intermedia*), and red stemmed filaree (*Erodium cicatarium)*. This community was found intermittently throughout the northern reach of the project site within vacant lots. This vegetation community consists of 20.75 acres, or approximately six percent, of the study area.

General Wildlife

The study area provides limited habitat for wildlife species that commonly occur within urban communities in Riverside County. Common urban-adapted avian species such as killdeer (*Charadrius vociferus*), red-tailed hawk (*Buteo jamaicensis*), Say's phoebe (*Sayornis saya*), black phoebe (*Sayornis nigricans*), mallard (*Anas platyrhynchos*), common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), bushtit (*Psaltriparus minimus*), lesser goldfinch (*Carduelis psaltria*), western kingbird (*Tyrannus verticalis*) and Anna's hummingbird (*Calypte anna*) were observed on site during the survey. Coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), and California ground squirrel (*Otospermophilus beecheyi*) were the only live mammals observed within the study area. Western fence lizard (*Sceloporus occidentalis*) was the only reptile observed within the study area. No sensitive species were observed within the study area.

Sensitive Biological Resources

Based on review of aerial photographs and the field reconnaissance survey, Rincon evaluated the potential presence of sensitive biological resources on and adjacent to the site.

Special Status Species

Local, state, and federal agencies regulate special status species and generally require an assessment of their presence or potential presence to be conducted prior to the approval of a proposed project. Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, species occurrence records from other sites in the vicinity of the study area, and previous reports for the project site. The potential for each special status species to occur in the study area was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **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 site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 5 years).

The literature review identified ten sensitive plant species and 30 sensitive wildlife species within five miles of the site (Appendix B; Table 1). One sensitive plant community, sycamore alder riparian

woodland, was identified approximately five miles from the project site. No woodland/riparian habitat was observed at the project site, nor is the habitat on site suitable to support such communities due the high level of disturbance/development. Sensitive plant and wildlife species typically have very specific habitat requirements, which are not found on the project site.

Special Status Plant Species

The project site is located within a highly developed urban transportation corridor. Additionally, proposed locations for extraction wells and treatment facilities are highly disturbed and surrounded by existing commercial and residential development. Due to the lack of specific habitat types or suitable substrates as well as the high levels of historic and existing disturbance, sensitive plant species are not expected to occur on the site.

Special Status Wildlife Species

The proposed project site is located within a highly developed urban transportation corridor and proposed locations for extraction wells and treatment facilities are highly disturbed and surrounded by existing commercial and residential development. Because of the lack of specific habitats as well as high levels of historic and existing disturbance, the site is not suitable for most special status wildlife species. The literature review identified 30 special status wildlife species recorded within five miles of the site. Twenty-eight of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland).

Low quality or marginal foraging and/or nesting habitat for two sensitive wildlife species, BUOW and California horned lark (*Eremophila alpestris actia*) occurs within and adjacent to the site. Undeveloped areas at the project site which contain marginally suitably habitat are largely dominated by low-growing, non-native ruderal species. California horned lark are typically ground nesters and are capable of nesting on bare ground which is present within the site. In addition, burrows and California ground squirrels were present at one proposed extraction well location, which indicates the presence of suitable habitat for BUOW (Figure 5). However, the habitat low quality and the potential for these species to occur is low due to the site's location within a heavily travelled urban transportation corridor and high levels of existing disturbance which would likely deter individuals from long-term use of the site. No horned larks, BUOW or signs of either species (e.g., pellets or white wash) were observed during the reconnaissance field survey.

Nesting Birds

Shrubs and trees located within the project site could provide suitable nesting habitat for several common avian species that were observed during the reconnaissance survey. Bird nests and eggs are protected by CFGC 3503 and the MBTA. Common species such as mourning dove and house finch have the potential to nest in shrubs, even in highly disturbed settings. Some species, such as horned larks, are typically ground nesters and are capable of nesting on bare ground which is present on the site. However, habitat is considered low quality due to existing disturbances and proximity to heavily travelled roadways. No nests or birds exhibiting nesting behaviors were observed during the reconnaissance site visit.

Sensitive Plant Communities

No sensitive plant communities as defined by the CNDDB or local ordinances are present on the site.

Jurisdictional Waters and Wetlands

The project site consists largely of vacant and developed areas. Additionally, locations where the extraction wells and treatment plants are proposed are interconnected by urban roadways. The majority of surrounding land use includes residential and commercially developed areas intermixed with small isolated areas of open space, vacant, and public lands. The NWI identified several potential jurisdictional features within the proposed project site; however, these features were photo-interpreted from black and white imagery in 1975 and based on the reconnaissance field survey these areas have since been developed with the features likely diverted into underground stormwater channels. Further, no hydric soils are present at the project site and no jurisdictional features were identified during the field reconnaissance survey. Therefore, no waters or wetlands potentially subject to the jurisdiction of the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), or CDFW are located within the project site.

Riparian/Riverine, Vernal Pool and Fairy Shrimp Habitat

Riparian/riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend on a nearby freshwater source or areas that contain a freshwater flow during all or a portion of the year (Riverside County, 2003). These areas may support one or more species listed in the MSHCP. Vernal pools are seasonal wetlands that occur in depressions, typically have wetland indicators that represent all three parameters (soils, vegetation, and hydrology), and are defined based on vernal pool indicator plant species during the wetter portion of the growing season but normally lack wetland indicators associated with vegetation and/or hydrology during the drier portion of the growing season.

Based upon the findings of Rincon's reconnaissance survey, no riparian/riverine habitat is present within the project site. The project site is heavily disturbed due to past agricultural uses, urban development, and is currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting riparian/riverine habitat. The proposed project would be confined to the existing developed, non-annual grasslands, and disturbed habitat areas.

No vernal pools or fairy shrimp habitat were observed within the project site. The project site is underlain by moderately well-drained soils. The only area with evidence of standing water was observed at the Santiago Well Site/Treatment Site Option 3. This ponding was wholly contained within an on-site water detainment basin with no off-site connection. In addition, areas within the survey area are heavily disturbed due to past agricultural uses, existing development, and are currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting vernal pools or vernal pool species. The proposed project would be confined to the existing developed, non-annual grasslands, and disturbed habitat areas.

Wildlife Movement

According to the Regional Conservation Authority (RCA) MSHCP Information App, the project site is not located within an MSHCP Criteria Area, Public-Quasi Public Reserve Lands or within a Core or Linkage

(RCA 2020). The CDFW BIOS (2020b) does not include any mapped essential habitat connectivity areas in the immediate vicinity of the site. The closest mapped essential habitat connectivity areas are located approximately 1.5 miles to the southeast near the Perris Reservoir and approximately three miles to the northeast in the vicinity of Box Springs Mountain Reserve Park. The proposed project would be confined to the existing developed and disturbed areas identified above. Additionally, the study area is separated from these conservation areas by public roadways and residential areas, and therefore the site is not expected to serve as a significant wildlife migratory corridor.

Resources Protected by Local Policies and Ordinances

The project site is located within the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area. County of Riverside Ordinance No. 663 (Stephen's Kangaroo Rat Mitigation Fee Ordinance) requires that all proposed development projects located within the fee area are reviewed to determine the most appropriate course of action to ensure the survival of the species through one or more of the following: (1) on-site mitigation of impacts to the Stephens' Kangaroo Rat through the reservation or addition of lands included within or immediately adjacent to a potential habitat reserve site, or (2) payment of the Mitigation Fee or (3) any combination of (1) and (2) consistent with the intent and purpose of the ordinance. No other resources protected by local policies or ordinances are present on the site.

Conservation Plans

The project site is located within the boundaries of the Western Riverside MSHCP. Portions of the site are located within a habitat assessment area for BUOW, but not within a designated study area identified for any other MSHCP covered species. The proposed project is not located within a criteria cell or within Public/Quasi Public conserved lands. Public/Quasi-Public conserved lands are located approximately 1.0 mile southeast of the project site in the Lake Perris State Recreation Area (Western Riverside County RCA 2020).

Impact Analysis and Mitigation Measures

Special Status Species

As mentioned above, ten sensitive plant species and 30 sensitive wildlife species are known to occur or have potential to occur within a five-mile radius of the site. Due to the lack of specific habitats or suitable substrates as well as the high levels of historic and existing disturbance, sensitive plant species are not expected to occur on the site. Therefore, impacts to sensitive plant species would be less than significant.

Of the 30 sensitive wildlife species identified, 28 of these species are not expected to occur due to lack of suitable habitat (e.g., riparian, scrub, woodland). The remaining two species with potential to occur within the site are BUOW and California horned lark. Construction activities associated with the proposed project are primarily located within areas of high disturbance and surrounded by development. Therefore, the proposed project is not expected to result in loss of suitable habitat for BUOW or California horned lark.

No special status wildlife species were observed during the reconnaissance survey and the potential for these species to occur is low due to the site' location directly adjacent to urban development. In addition, vacant areas at the project site are highly fragmented. Such high level of disturbance would

likely deter individuals from long-term use of the project site. Notwithstanding, to avoid direct impacts to burrowing owl, the following mitigation measures should be implemented:

- **Burrowing Owl Preconstruction Clearance Survey.** A qualified wildlife biologist shall conduct a pre-construction survey of the impact areas to confirm presence/absence of burrowing owl individuals no more than 30 days prior to construction. The survey methodology will be consistent with the methods outlined in the CDFW *Staff Report on Burrowing Owl Mitigation* (2012). If no active breeding or wintering owls are identified, no further mitigation is required.

  If burrowing owls are detected onsite, the following mitigation measures shall be implemented in accordance with the CDFW *Staff Report on Burrowing Owl Mitigation* (2012):

  - A qualified wildlife biologist shall be onsite during initial ground-disturbing activities in potential burrowing owl habitat.
  - No ground-disturbing activities shall be permitted within a buffer no less than 200 meters (656 feet) from an active burrow, depending on the level of disturbance, unless otherwise authorized by CDFW. Occupied burrows will not be disturbed during the nesting season (February 1 to August 31), unless a qualified biologist verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival.
  - During the nonbreeding (winter) season (September 1 to January 31), ground-disturbing work can proceed near active burrows as long as the work occurs no closer than 50 meters (165 feet) from the burrow, depending on the level of disturbance, and the site is not directly affected by the project activity. A smaller buffer may be established in consultation with CDFW. If active winter burrows are found that would be directly affected by ground-disturbing activities, owls can be excluded from winter burrows according to recommendations made in the *Staff Report on Burrowing Owl Mitigation* (2012).
  - Burrowing owls shall not be excluded from burrows unless or until a Burrowing Owl Exclusion Plan is developed based on the recommendations made in the St*aff Report on Burrowing Owl Mitigation* (2012). The plan shall include, at a minimum:
    - Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species
    - Type of scope to be used and appropriate timing of scoping
    - Occupancy factors to look for and what shall guide determination of vacancy and excavation timing
    - Methods for burrow excavation
    - Removal of other potential owl burrow surrogates or refugia onsite
    - Methods for photographic documentation of the excavation and closure of the burrow
    - Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take
    - Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals
  - Compensatory mitigation for lost breeding and/or wintering habitat shall be implemented onsite or off-site through implementation of a Mitigation Land Management Plan based on the

Staff Report on Burrowing Owl Mitigation (CDFW 2012) guidance. The plan shall include the following components, at a minimum:

- Temporarily disturbed habitat on the project site shall be restored, if feasible, to pre-project conditions, including decompacting soil and revegetating;
- Permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat shall be mitigated such that the habitat acreage, number of burrows and burrowing owl impacted are replaced based on a site-specific analysis which includes conservation of similar vegetation communities comparable to or better than that of the impact area, and with sufficiently large acreage, and presence of fossorial mammals;
- Mitigation land acreage shall not exceed the size of the project site;
- Permanently protect mitigation land through a conservation easement deeded to a nonprofit conservation organization or public agency with a conservation mission. If the project is located within the service area of a CDFW approved burrowing owl conservation bank, the project operator may purchase available burrowing owl conservation bank credits.
- Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
- Mitigation lands shall be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.

As described above, the project site contains trees that could provide suitable nesting habitat for several common avian species. In order to avoid impacts to nesting birds, the following mitigation measure shall be implemented:

- **Preconstruction Nesting Bird Survey.** If project activities must occur during the avian nesting season (February to September), a survey for active nests must be conducted by a qualified biologist, one to two weeks prior to the activities. If active nests are identified and present onsite, clearing and construction within 50-250 feet of the nest, depending on the species involved (50 feet for common urban-adapted native birds and up to 250 feet for raptors), shall be postponed until the nest is vacated and juveniles have fledged, and there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest site shall be established in the field by a qualified biologist with flagging and stakes or construction fencing. Construction personnel shall be instructed regarding the ecological sensitivity of the fenced area. If construction must occur within this buffer, it shall be conducted at the discretion of a qualified biological monitor to assure that indirect impacts to nesting birds are avoided.

Sensitive Plant Communities

The site does not contain riparian habitat or other sensitive natural communities. Therefore, no impacts are expected.

Jurisdictional Waters and Wetlands

The site does not contain any jurisdictional drainages or wetlands. A man-made and maintained earthen retention basin was observed at the Treatment Site Option 3 location during the January 2020 field survey (Appendix A Photograph 10). No riparian vegetation, including trees, shrubs, persistent emergents, emergent mosses, or lichens, were present in or around the basin. Additionally, the feature

was contained within the on-site water detainment basin with no off-site connection. As a result, the basin is not considered a jurisdictional feature. No impacts to jurisdictional waters and wetlands are expected as a result of the proposed project.

Riparian/Riverine, Vernal Pool and Fairy Shrimp Habitat

Based upon the findings of Rincon's reconnaissance survey, no riparian/riverine habitat is present within the project site. The project site is heavily disturbed due to past agricultural uses, urban development, and is currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting riparian/riverine habitat. The proposed project would be confined to the existing developed, non-native annual grasslands, and disturbed habitat areas. No riparian/riverine habitat occurs within the proposed project site; and therefore, no further actions related to riparian/riverine habitat are required pursuant to the MSHCP. Additionally, no jurisdictional features are located within the project site that are under the jurisdiction of the USACE, RWQCB, or CDFW.

No vernal pools or fairy shrimp habitat were observed within the project site. The project site is underlain by moderately well-drained soils. The only area with evidence of standing water was observed at the Santiago Well Site/Treatment Site Option 3. This ponding was wholly contained within an on-site water detainment basin with no off-site connection. In addition, areas within the survey area are heavily disturbed due to past agricultural uses, existing development, and are currently either unvegetated, developed, or dominated by exotic upland species not conducive to supporting vernal pools or vernal pool species. The proposed project would be confined to the existing developed, non-annual grasslands, and disturbed habitat areas. No vernal pool or fairy shrimp habitat occurs within the proposed project site; and therefore, no further actions related to vernal pools are required pursuant to the MSHCP.

Wildlife Movement

As discussed above, the site is not located within an MSHCP Criteria Area, Public-Quasi Public Reserve Lands or within a Core or Linkage (RCA 2020). In addition, CDFW BIOS (2020b) does not include any mapped essential habitat connectivity areas within the immediate vicinity of the site. The closest mapped essential habitat connectivity areas are located approximately 1.5 miles to the southeast in the vicinity of the Perris Reservoir and approximately three miles to the northeast in the vicinity of Box Springs Mountain Reserve Park. The site is separated from these habitat connectivity areas by existing development and paved roadways. In addition, the site is surrounded by existing development and heavily traveled transportation corridors, including the March Air Reserve Base and Interstate 215 freeway, and is therefore, not expected to serve as a significant migratory wildlife corridor. Therefore, no impacts to wildlife movement are expected.

Local Policies and Ordinances

The proposed project is located within the County of Riverside Stephen's Kangaroo Rat Plan and Fee Area. County of Riverside Ordinance No. 663 (Stephen's Kangaroo Rat Mitigation Fee Ordinance) requires that all proposed development projects located within the fee area are reviewed to determine the most appropriate course of action to ensure the survival of the species through one or more of the following: (1) on-site mitigation of impacts to the Stephens' Kangaroo Rat through the reservation or addition of lands included within or immediately adjacent to a potential habitat reserve site, or (2) payment of the Mitigation Fee or (3) any combination of (1) and (2) consistent with the intent and

purpose of the ordinance. The proposed project site lacks suitable grassland, coastal scrub and sagebrush habitat to support Stephen's Kangaroo Rat and is located directly adjacent urban roadway. In addition, vacant areas at the project site are highly fragmented and surrounded by urban development. Therefore, the proposed project would not result in impacts to or loss of suitable habitat for Stephen's Kangaroo Rat and would not be subject to on-site mitigation or payment of the Mitigation Fee. No other resources protected by local policies or ordinances are present on the site.

Conservation Plans

The proposed project is located within the boundaries of the Western Riverside MSHCP. Portions of the site are located within the study area for BUOW, but not within a designated study area identified for any other MSHCP covered species. The proposed project is not located within a criteria cell or within Public/Quasi Public conserved lands. Public/Quasi-Public conserved lands are located approximately 1.0 mile southeast at the Lake Perris State Recreation Area. Based on the project's distance and separation from Public/Quasi-Public lands and the existing development between them, the proposed project is not expected to impact these conserved areas. As discussed above, no BUOW or their sign were observed during the reconnaissance-level biological resources field surveys on January 20 and 21, 2020. The potential for BUOW to occur is low due to the site's location within a highly disturbed area surrounded by urban development which would likely deter individuals from long-term use of the site. However, implementing the above measures for BUOW would ensure the proposed project would not result in impacts to or loss of suitable habitat for the species.

Thank you for the opportunity to provide this Biological Resources Assessment. Please contact the undersigned with any questions.

Sincerely,
Rincon Consultants, Inc.

Ryan Gilmore
Senior Biologist / Project Manager

Steven J. Hongola
Principal Biologist

Attachments

References

Figures

Appendix A Project Site Photographs

Appendix B Special Status Species Potential for Occurrence

Appendix C Observed Plant Species List

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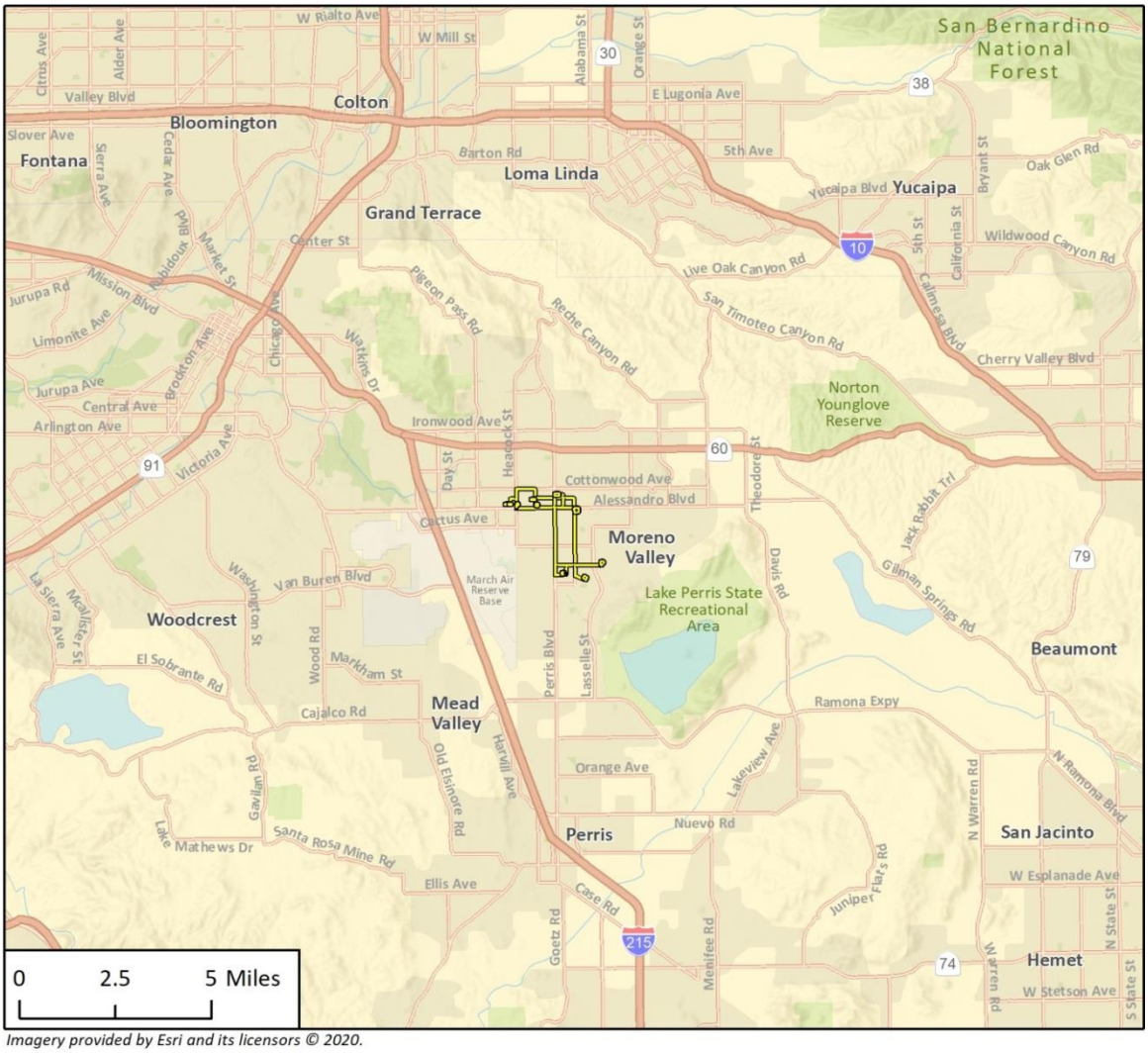
Figure 1 Project Location



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Project Location

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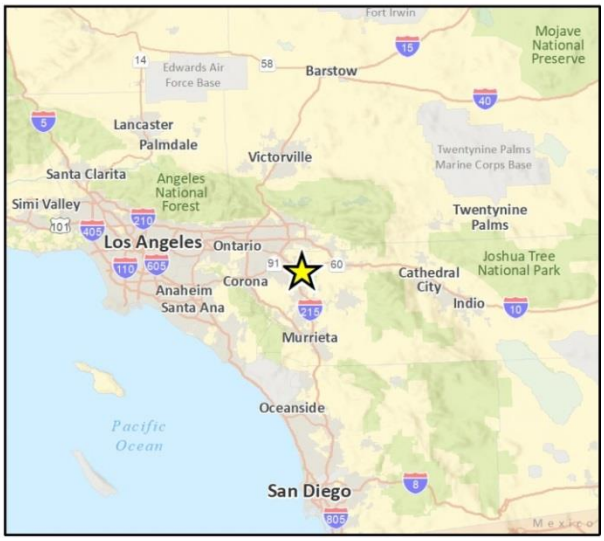

Figure 2 Topographic Map of Project Site

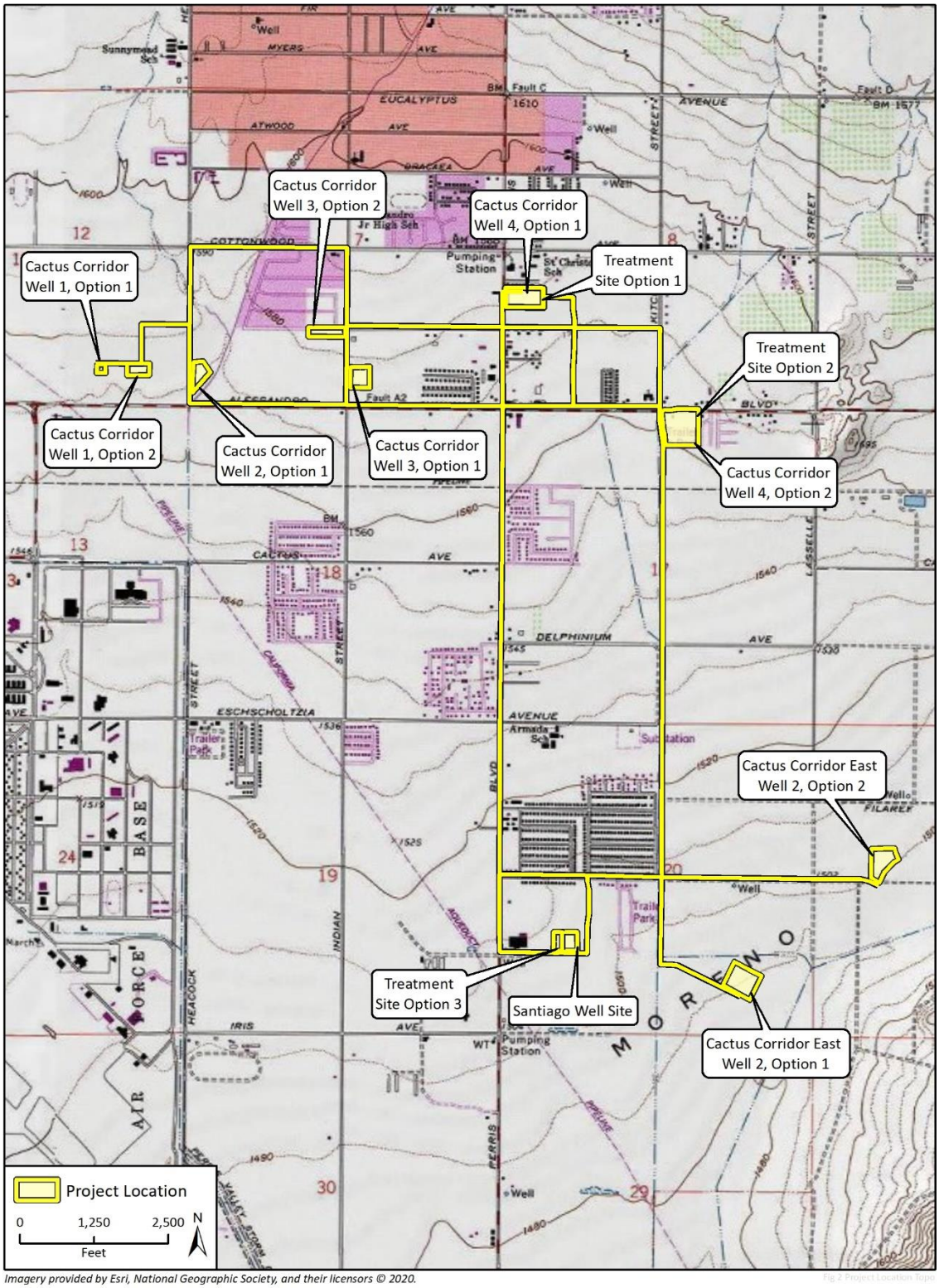

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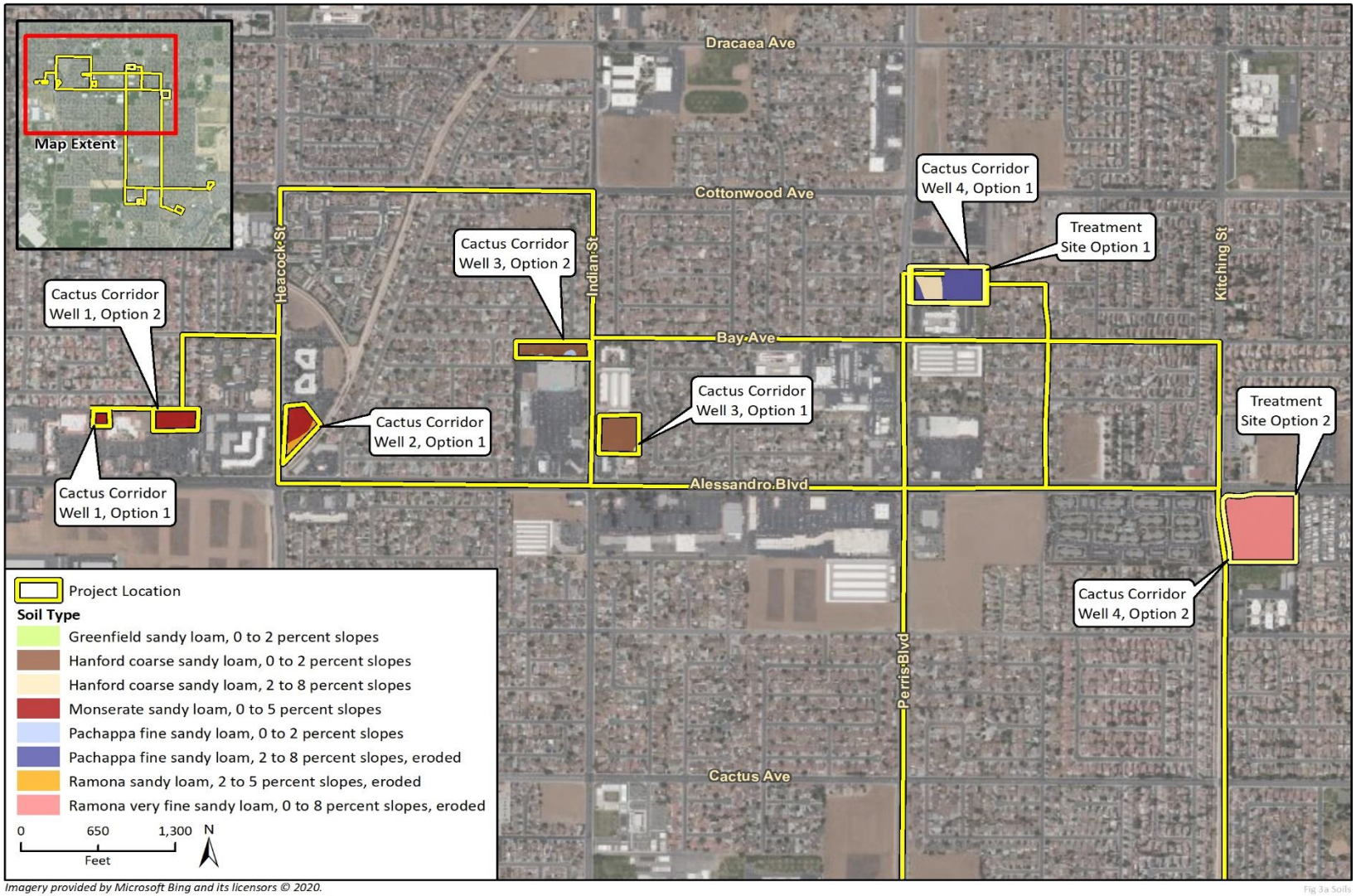
Figure 3a USDA Soils Map Northern Area



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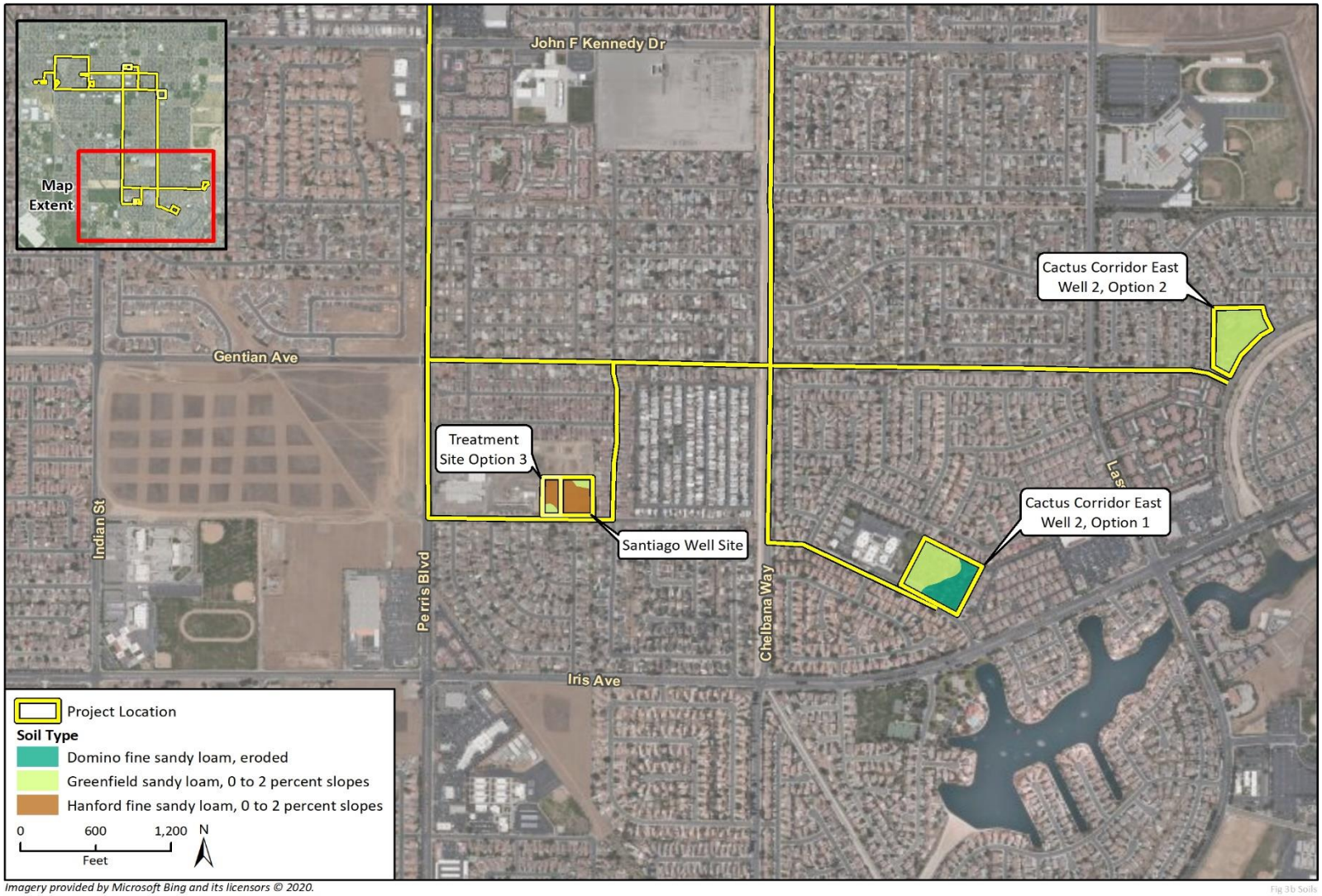
Soil data provided by SSURGO Downloader, NRCS, USDA, 2019.

Fig 3a Soils

Figure 3b USDA Soils Map Southern Area



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Soil data provided by SSURGO Downloader, NRCS, USDA, 2019.

Fig 3b Soils

Figure 4 Vegetation Communities Map

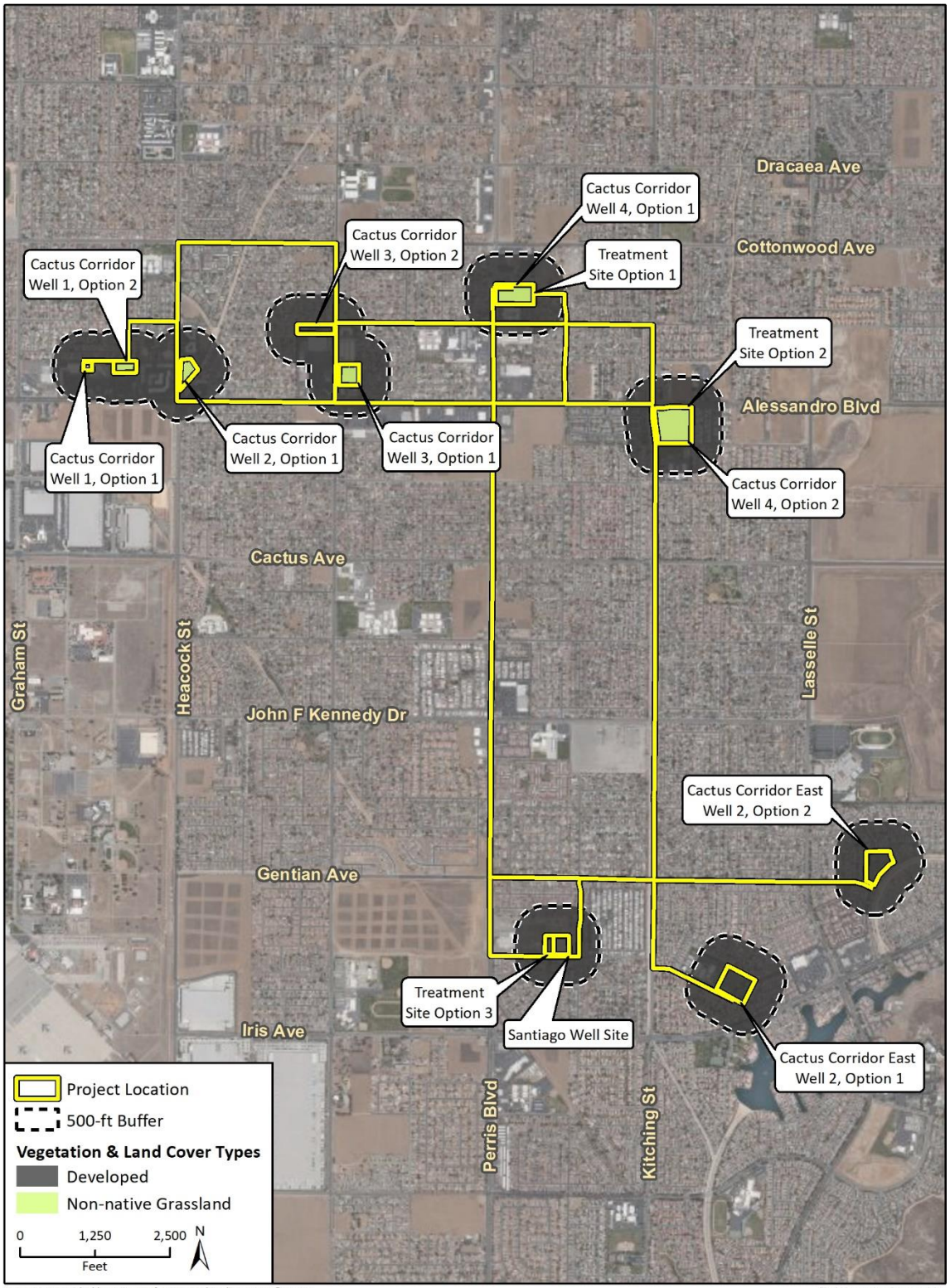

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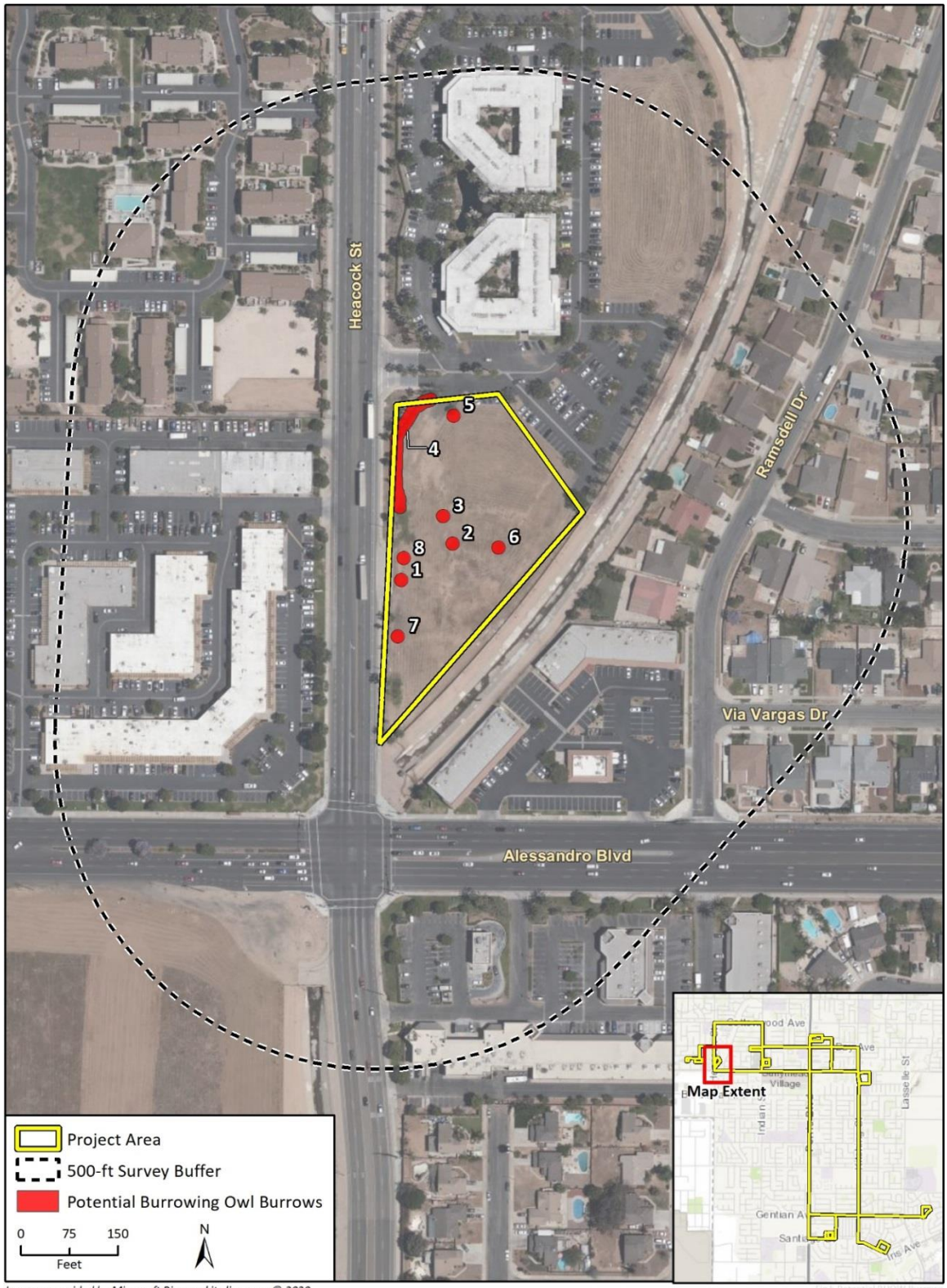
Figure 5 Potential BUOW Burrows



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Appendix A

Project Site Photographs

Photograph 1. Proposed location for Cactus Corridor Well 1, Option 1 at northwest corner of project site. View to the south.

Photograph 2. Proposed location for Cactus Corridor Well 1, Option 2 at northwest corner of project site. View to the northeast.

Photograph 3. Proposed location for Cactus Corridor Well 2, Option 1 in northwest portion of the project site. View to the northeast.

Photograph 4. Potential BUOW burrows at proposed location for Cactus Corridor Well 2, Option 1. View to the west.

Photograph 5. Proposed location for Cactus Corridor Well 3, Option 1 in northern portion of the project site. View to the east.

Photograph 6. Proposed location for Cactus Corridor Well 3, Option 3 in northern portion of the project site. View to the south.

Photograph 7. Proposed location for Cactus Corridor Well 4, Option 1. View to the east.

Photograph 8. Proposed location for Treatment Site, Option 1. View to the north.

Photograph 9. Proposed location for Treatment Site Option 2. View to the east.

Photograph 10. Proposed location for Santiago Well Site. View to the east. Note: Water detainment basin located on site.

Photograph 11. Proposed location for Treatment Site Option 3. View to the northeast.

Photograph 12. Proposed location for Cactus Corridor East Well 2, Option 1. View to the east.

Photograph 13. Proposed location for Cactus Corridor East Well 2, Option 2. View to the north.

Appendix B

Special Status Species Potential for Occurrence

Table 1 Special Status Species Potential for Occurrence

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Plants				
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 20-1020 m. Annual herb. Blooms Jan-April.	Not Expected	No suitable scrub, woodland, or chaparral habitat present on site. Study area is highly developed/disturbed.
Lasthenia glabrata ssp. *Coulteri* Coulter's goldfields	None/None G4T2/S2 1B.1	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m. Annual herb. Blooms Feb-Jun.	Not Expected	No salt marshes, playas, or vernal pool habitat on site. Suitable alkaline soils do not occur on site.
Centromadia pungens ssp. *laevis* smooth tarplant	None/None G3G4T2/S2 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m. annual herb. Blooms Apr-Sep	Not Expected	No suitable grassland, scrub, or riparian habitat present on site. Alkali soils and vegetation absent. Study area is highly developed/ disturbed.
Chorizanthe parryi var. *parryi* Parry's spineflower	None/None G3T2/S2 1B.1	Coastal scrub, chaparral, cismontane woodland, valley and foothill grassland. Dry slopes and flats; sometimes at interface of 2 vegetation types, such as chaparral and oak woodland. Dry, sandy soils. 90-1220 m. annual herb. Blooms Apr-Jun	Not Expected	No suitable scrub, woodland, or grassland habitat present on site. Study area is highly developed/disturbed.
Calochortus plummerae Plummer's mariposa-lily	None/None G4/S4 4.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous forest. Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 60-2500 m. Perennial herb. Blooms Mar-Jul.	Not Expected	No suitable scrub, chaparral, woodland, or grassland habitat present on site. Study area is highly developed/disturbed.
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	None/None G5T3/S3 4.3	Chaparral, coastal scrub. Dry soils, shrubland. 4-1435 m. Annual herb. Blooms Jan – Jul.	Not Expected.	No suitable chaparral or scrub habitat present on site. Project site is highly developed/disturbed.
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 20-855 m. annual herb. Blooms Jan-Apr(May)	Not Expected	No suitable scrub or woodland habitat present on site. Study area is highly developed/disturbed.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	Endangered/ Endangered G4?T1/S1 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m. Annual herb. Blooms Mar-Oct.	Not Expected	No salt marsh or swamp habitat present on site. Project site is highly developed/disturbed.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Trichocoronis wrightii var. *wrightii* Wright's trichocoronis	None/None G4T3/S1 2B.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools. Mud flats of vernal lakes, drying river beds, alkali meadows. 5-435 m. Annual herb. Blooms Mar-Sep.	Not Expected	No marsh, riparian, or vernal pool habitat present. Project site is highly disturbed/developed.
Atriplex coronata var. notatior San Jacinto Valley crownscale	Endangered/ None G4T1/S1 1B.1	Playas, valley and foothill grassland, vernal pools. Alkaline areas in the San Jacinto River Valley. 35-460 m. Annual herb. Blooms Apr-Aug.	Not Expected	No playa, grassland, or vernal pool habitat present. Project site is highly disturbed/developed.
Invertebrates				
Streptocephalus woottoni Riverside fairy shrimp	Endangered/ None G1G2/S1S2	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	Not Expected	No suitable swales, grassland, scrub, or vernal pool habitat present on site. Study area is highly developed/disturbed.
Amphibians				
Spea hammondii western spadefoot	None/None G3/S3 SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Not Expected	No suitable grassland, woodland or vernal pool habitat present on site. Study area is highly developed/disturbed.
Reptiles				
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 SSC	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	Not Expected	No suitable scrub habitat present on site. Grassland habitat present on site consists of highly disturbed, ornamental, or fragmented areas surrounded by development. Project site is highly developed/disturbed and surrounded by existing development.
Aspidoscelis tigris stejnegeri coastal whiptail	None/None G5T5/S3 SSC	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	Not Expected	No desert, woodland or riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Crotalus ruber red-diamond rattlesnake	None/None G4/S3 SSC	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	Not Expected	No rocky areas or dense vegetation present on site. Study area is highly developed/disturbed and surrounded by existing development.
Phrynosoma blainvillii coast horned lizard	None/None G3G4/S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Not Expected	No sandy washes or bushes present on site. Study area is highly developed/disturbed and surrounded by existing development.
Anniella stebbinsi Southern California legless lizard	None/None G3/S2	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	Not Expected	No suitable soils or sparse vegetation present on site. Study area is highly developed/disturbed and surrounded by existing development.
Birds				
Accipiter cooperii Cooper's hawk	None/None G5/S4 WL	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Not Expected	No suitable woodland or riparian habitat present on site. Study area is highly developed/ disturbed and surrounded by existing development.
Agelaius tricolor tricolored blackbird	None/ Threatened G2G3/S1S2 SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/None G5T3/S3 WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Artemisiospiza belli belli Bell's sage sparrow	None/None G5T2T4/S3 WL	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Not Expected	No suitable chaparral or scrub habitat present on site. Study area is highly developed/ Disturbed and surrounded by existing development.
Athene cunicularia burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low	The project site contains disturbed ruderal habitat and bare ground which may provide marginal habitat for this species. California ground squirrel burrows are present nearby. Habitat quality and potential for occurrence are low due to high levels of existing development/ disturbance as well as the site's location surrounded by existing development.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Threatened/ Endangered G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4 WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Low	The project site contains disturbed ruderal habitat and bare ground which may provide marginal habitat for this species. Habitat quality and potential for occurrence is considered low due to high levels of existing development/ disturbance.
Icteria virens yellow-breasted chat	None/None G5/S3 SSC	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Lanius ludovicianus loggerhead shrike	None/None G4/S4 SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Not Expected	No suitable woodland, savannah, or scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Polioptila californica californica coastal California gnatcatcher	Threatened/ None G4G5T2Q/S2 SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Spinus lawrencei Lawrence's goldfinch	None/None G3G4/S3S4	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.	Not Expected	No suitable woodland or chaparral habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Vireo bellii pusillus least Bell's vireo	Endangered/ Endangered G5T2/S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Not Expected	No suitable riparian habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Buteo regalis ferruginous hawk	None/None G4/S3S4	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Not Expected	No suitable grassland, sagebrush, scrub, or pinyon and juniper woodland habitats present. Project site is highly disturbed/developed and surrounded by existing development.
Mammals				
Chaetodipus fallax fallax northwestern San Diego pocket mouse	None/None G5T3T4/S3S4 SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	Not Expected	No suitable scrub or grassland habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Dipodomys stephensi Stephens' kangaroo rat	Endangered/ Threatened G2/S2	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	Not Expected	No suitable scrub or grassland habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Eumops perotis californicus western mastiff bat	None/None G5T4/S3S4 SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Not Expected	No suitable woodland, scrub, grassland or habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Lasiurus xanthinus western yellow bat	None/None G5/S3 SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Not Expected	No suitable riparian habitats or trees for roosts present on site. Study area is highly developed/disturbed and surrounded by existing development.
Lepus californicus bennettii San Diego black-tailed jackrabbit	None/None G5T3T4/S3S4 SSC	Intermediate canopy stages of shrub habitats & open shrub/herbaceous & tree/herbaceous edges. Coastal sage scrub habitats in Southern California.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Nyctinomops femorosaccus pocketed free-tailed bat	None/None G4/S3 SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	Not Expected	No suitable woodland, scrub, riparian or cliff habitats present on site. Study area is highly developed/disturbed and surrounded by existing development.
Onychomys torridus ramona southern grasshopper mouse	None/None G5T3/S3 SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.	Not Expected	No suitable scrub habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/None G5T1T2/S1S2 SSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	Not Expected	No suitable scrub or grassland habitat present on site. Study area is highly developed/disturbed and surrounded by existing development.
Taxidea taxus American badger	None/None G5/S3	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Not Expected	No suitable shrub, forest, or herbaceous habitats present. Project site is highly disturbed/developed and surrounded by existing development.

Scientific Name Common Name	Status	Habitat Requirements	Potential to Occur in Study Area	Habitat Suitability/ Observations
Dipodomys merriami parvus San Bernardino kangaroo rat	FE/SCE	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	Not Expected	No suitable alluvial scrub vegetation present. Project site is highly disturbed/developed and surrounded by existing development.

Status: Federal/State

FE = Federal Endangered
FT = Federal Threatened
CFT = Candidate Federal Threatened
FDL = Federal Delisted
SE = State Endangered
ST = State Threatened
SCE = Candidate State Endangered
SR = State Rare
SDL = State Delisted
SSC = CDFW Species of Special Concern
FP = CDFW Fully Protected
WL = CDFW Watch List

CRPR (CNPS California Rare Plant Rank)

1A = Presumed Extinct in California
1B = Rare, Threatened, or Endangered in California and elsewhere
2 = Rare, Threatened, or Endangered in California, but more common elsewhere
3 = Need more information (a Review List)
4 = Plants of Limited Distribution (a Watch List)

CRPR Threat Code Extension

.1 = Seriously endangered in California (>80% of occurrences threatened/high degree and immediacy of threat)
.2 = Fairly endangered in California (20-80% of occurrences threatened)
.3 = Not very endangered in California (<20% of occurrences threatened)

Other Statuses

G1 or S1	Critically Imperiled Globally or Subnationally (state)
G2 or S2	Imperiled Globally or Subnationally (state)
G3 or S3	Vulnerable to extirpation or extinction Globally or Subnationally (state)
G4/5 or S4/5	Apparently secure, common and abundant
GH or SH	Possibly Extirpated – missing; known from only historical occurrences but still some hope of rediscovery

Additional notations may be provided as follows

T – Intraspecific Taxon (subspecies, varieties, and other designations below the level of species)
Q – Questionable taxonomy that may reduce conservation priority
? – Inexact numeric rank

Appendix C

Observed Plant Species List

Observed Plant Species List

Scientific Name[1]	Common Name	Indicator Status[2]: Arid West Region
Amsinckia intermedia	common fiddleneck	NL (UPL)
Avena fatua	wildoats	NL (UPL)
Baccharis salicifolia	mulefat	FAC
Bromus madritensis ssp. *rubens*	red brome	UPL
Erodium cicatarium	red stemmed filaree	NL (UPL)
Helianthus annus	common sunflower	FACU
Heterotheca grandiflora	telegraph weed	NL (UPL)
Salix laevigata	red willow	FACW
Salsola tragus	Russian thistle	FACU
Schinus molle	Peruvian pepper tree	FACU
Schismus barbatus	Mediterranean schismus	NL (UPL)

[1] Scientific Name as listed in the State of California 2016 Wetland Plant List for listed species, or from Jepson eFlora for taxa not currently included in the State of California 2016 Wetland Plant List

[2] Indicator Status Codes:

FAC	Equally likely to occur in wetlands and non-wetlands.
FACU	Plants that typically occur in xeric or mesic non-wetland habitats but may frequently occur in standing water or saturated soils.
UPL	Plants that rarely occur in water or saturated soils.
NL (UPL)	Species is not listed and therefore treated as an upland plant in this region

APPENDIX C: CULTURAL RESOURCES ASSESSMENT

Cactus Avenue Corridor Project

Cultural Resources Assessment Report

prepared for

Woodard & Curran
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February 2020

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Appendix A Records Search Results (Confidential)

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Executive Summary

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) to perform a cultural resources assessment for the Cactus Avenue Corridor Project (project) in the city of Moreno Valley, Riverside County, California. The project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The Project includes construction and operation of extraction wells, raw water pipelines, a water treatment and blending plant, and treated water pipelines. The purpose of this report is to document the tasks Rincon conducted; specifically, a cultural resources records search, Native American and local historic group consultation, historical map and imagery review, and a field survey. This study has been completed in accordance with the requirements of a California Environmental Quality Act (CEQA)-Plus investigation, which includes an evaluation of project impacts under CEQA, Section 106 of the National Historic Preservation Act (NHPA), and the National Environmental Policy Act in case a federal nexus is established during the project (i.e., federal funding and/or permitting).

The records search identified 16 previously recorded cultural resources within 0.5 mile of the project's Area of Potential Effects (APE). These include five prehistoric archaeological sites, two prehistoric isolated artifacts or features, three historic-period archaeological sites, and six historic-period built-environment (buildings and structures) resources. None of these previously recorded cultural resources are located within the APE.

A search of the Sacred Lands File at the Native American Heritage Commission returned negative results. Rincon subsequently conducted consultation with local Native American groups to obtain information on known Native American resources located in the APE or vicinity. As of February 5, 2020, a total of 15 responses have been received. In addition, Rincon also conducted consultation with local historical societies to obtain additional information on historic-period cultural resources in the area. Two responses were received from the March Field Air Museum and City of Moreno Valley Environmental and Historical Preservation Board and no responses were received from the Moreno Valley Historical Society and the Riverside African American Historical Society as a result of the historic group consultation efforts.

An intensive pedestrian survey of the proposed pipeline alignments and proposed well and treatment sites identified no cultural resources within the APE. The lack of surface evidence of archaeological remains does not preclude their subsurface existence as prehistoric and historic period resources have been recorded in the region. However, results of the record search indicate no substantial prehistoric or historic period archaeological remains are present within or adjacent to the project alignment. Given these findings, the project APE does not appear to be highly sensitive for buried archaeological remains.

Based on the results of the records search, Native American and local historic group consultation, and field survey, no cultural resources were identified in the project's APE that will be impacted or adversely affected by the project. Therefore, Rincon recommends a finding of ***no impact to historical and archaeological resources*** under CEQA and ***no historic properties affected*** under Section 106 of the NHPA.

Rincon presents the following recommendation in case of unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under Section 106 of the NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

Human Remains

If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

1 Introduction

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) to perform a cultural resources assessment for the Eastern Municipal Water District's (EMWD) Cactus Avenue Corridor Project (project) in the city of Moreno Valley, Riverside County, California. The purpose of this report is to document the tasks Rincon conducted; specifically, a cultural resources records search, Native American and local historic group consultation, historical map and imagery review, and a field survey. Rincon understands the project requires review by the State Water Resources Control Board and may be completed using federal funding. Therefore, the cultural resources study was completed in accordance with California Environmental Quality Act (CEQA)-Plus standards for compliance with CEQA, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act (NHPA).

1.1 Project Location

The project site is within the city of Moreno Valley in western Riverside County, California (Figure 1 and Figure 2). More specifically, it encompasses a portion of Township 3 south, Range 3 west, sections 7, 8, and 17-21 of the United States Geological Survey *Riverside East, CA* and *Sunnymead, CA* 7.5-minute topographic quadrangles (Figure 3a and Figure 3b). The project site and surrounding area are characterized by a mix of residential, commercial, and light industrial development.

1.2 Project Description

The project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The project includes construction and operation of extraction wells, raw water and treated water pipelines, and a water treatment and blending plant. Descriptions of the various project elements are provided below.

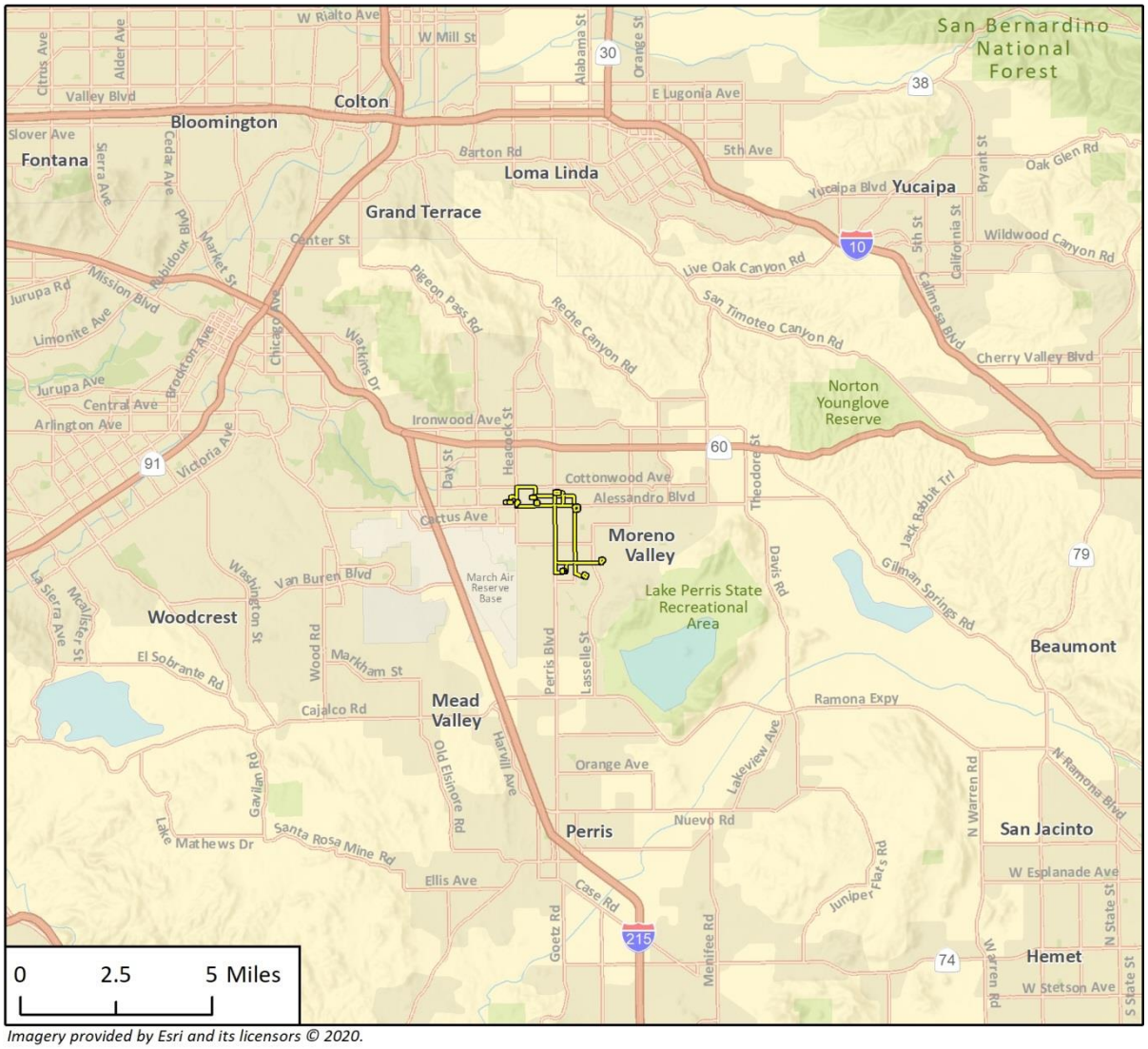
Extraction Wells

Up to six extraction wells would be constructed in the project Area of Potential Effects (APE). EMWD has identified nine potential locations for the well sites. The extraction wells would be constructed in two phases: a well drilling phase, and a well equipping phase. Construction of the extraction wells is assumed to temporarily disturb 100 percent of each of the parcel sites. Each well site would be designed to utilize the existing grade of the parcel where applicable. Each well would be constructed with an accompanying overflow (i.e., blow-off) pond. Portable, steel liquid container tanks (i.e. Baker Tanks) would be used for on-site dewatering clarification.

Pipelines

Approximately 30,000 linear feet of pipeline would be constructed to convey raw water from the extraction wells to the proposed treatment plant and to convey treated water to the distribution system. These pipelines would be located primarily within easements, roadway rights-of-way, and EMWD owned land. There would be up to 2,650 linear feet of 30-inch pipeline to convey treated

Figure 1 Project Location Map



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Project Location

N

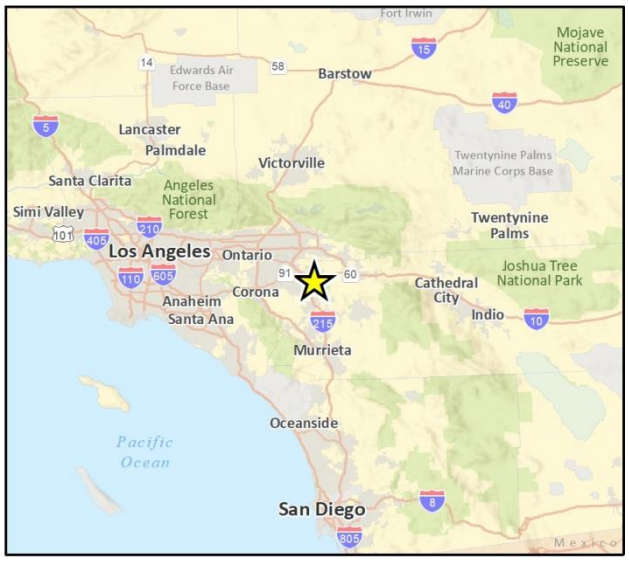

Figure 2 Project Vicinity Map

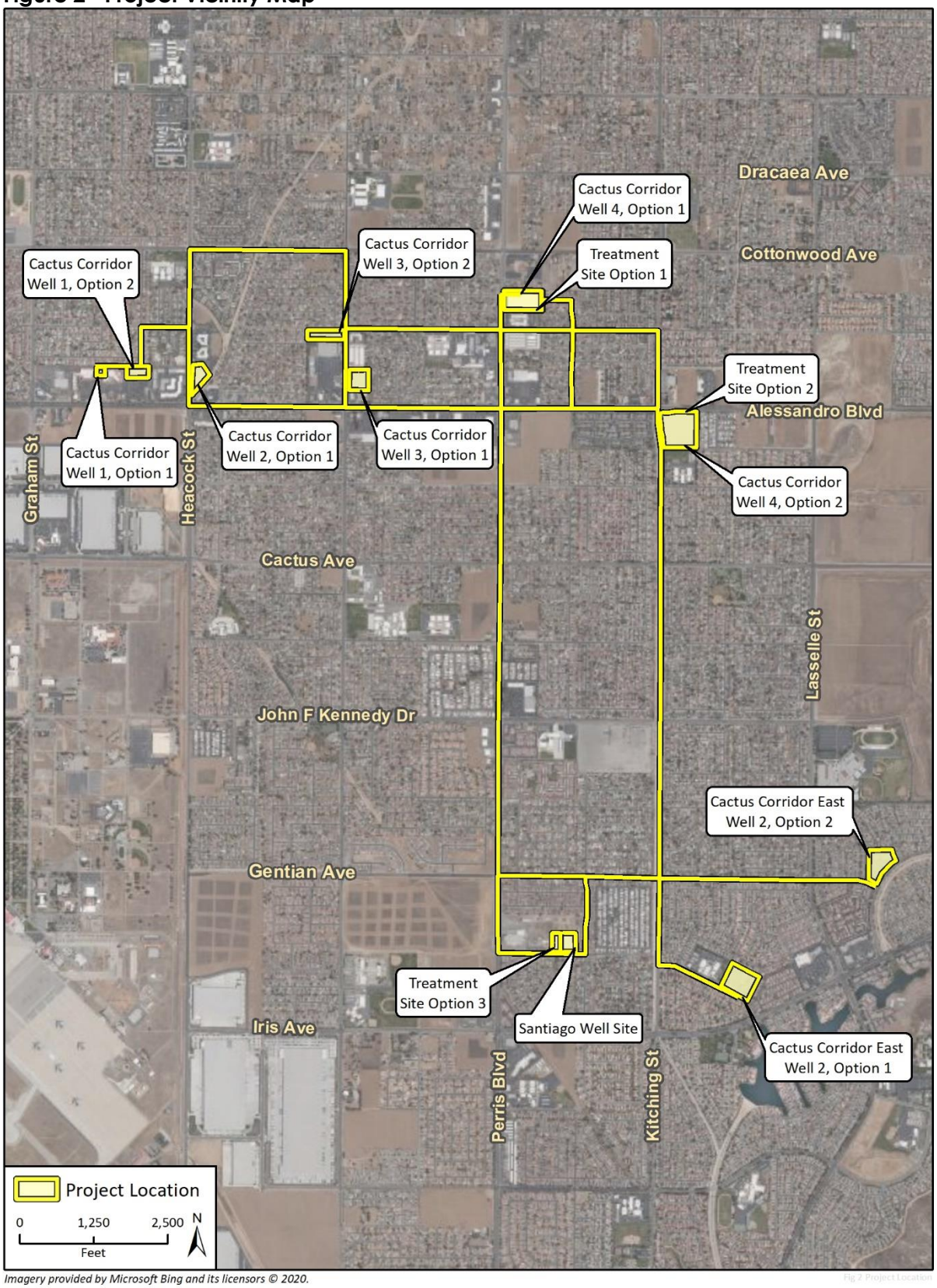

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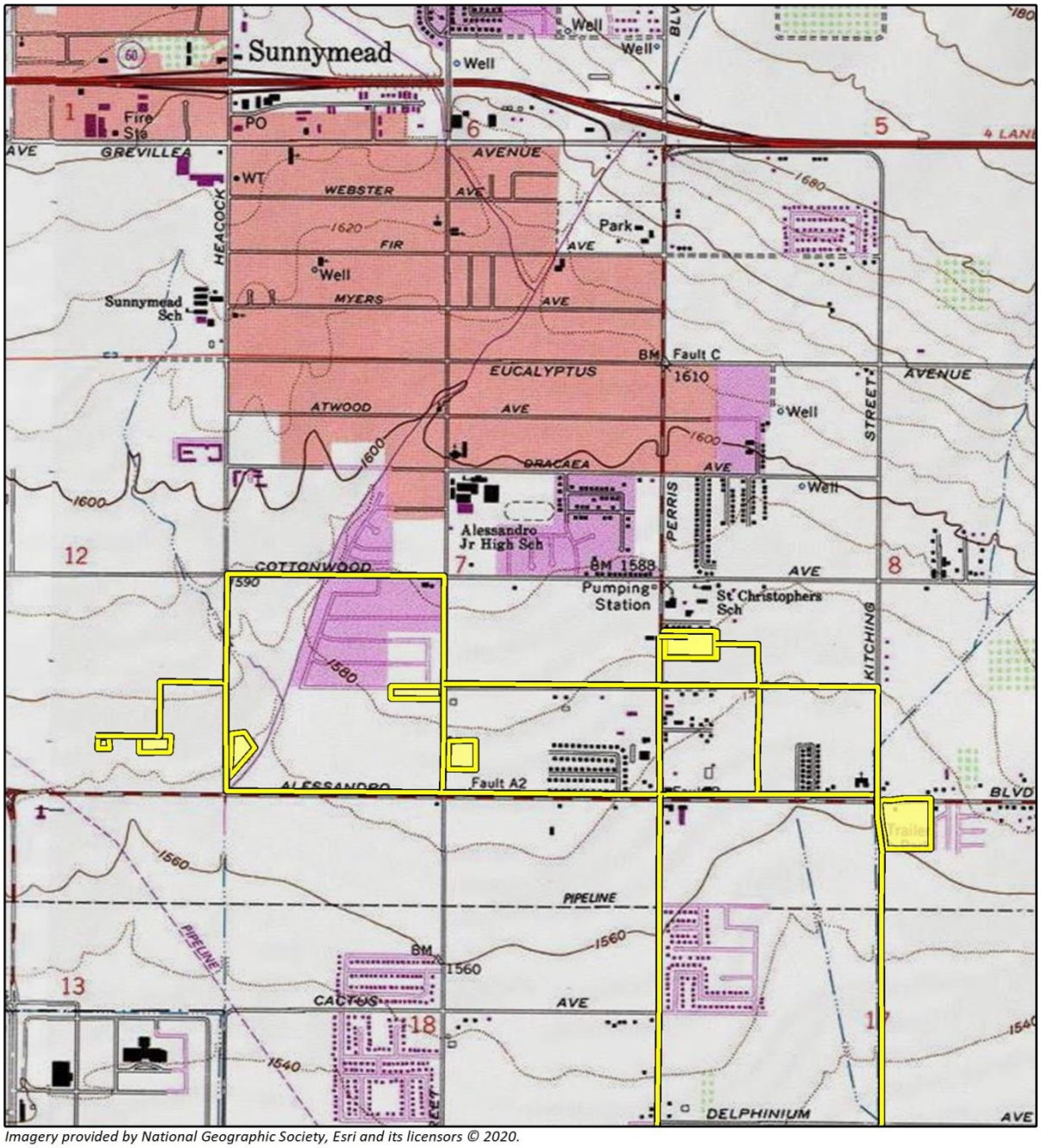
Figure 3a Area of Potential Effects Map



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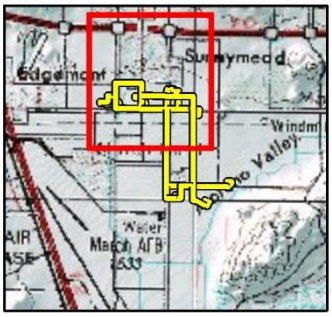
Project Area of Potential Effect

0 1,000 2,000 Feet

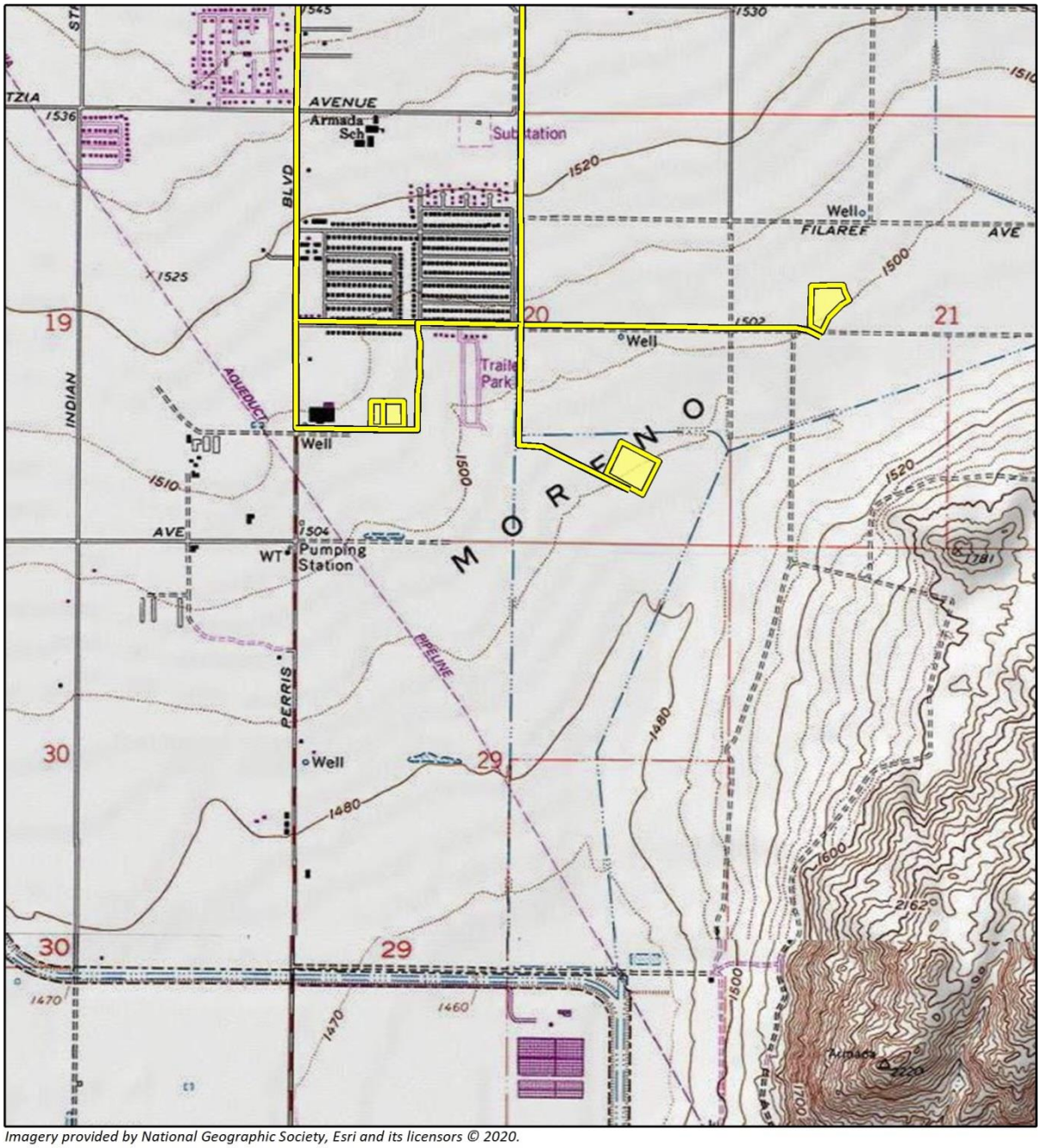
0 250 500 Meters

N



CRFig X Project Locations Topo Map

Figure 3b Area of Potential Effects Map (continued)



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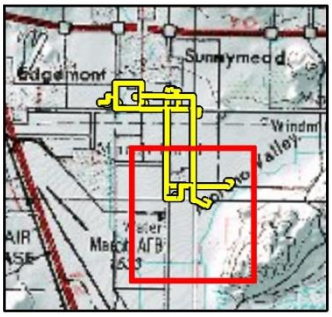
Project Area of Potential Effect

0 1,000 2,000 Feet

0 250 500 Meters

N



CRFig X Project Locations Topo Map

water from the central treatment and blending facility to the distribution system, and up to 30,400 linear feet of pipe to convey raw water from the extraction wells to the treatment and blending facility. The raw water pipeline would vary in diameter from 8-, 12- or 16-inches. There would also be approximately 100 linear feet of 18-inch pipe to discharge brackish water from the central treatment and blending facility to the sanitary sewer system. The future Cactus II Feeder pipelines and turn-outs used for conveyance of Metropolitan Water District of Southern California (Metropolitan) water for blending are not a part of this environmental analysis; they were analyzed under an Initial Study-Mitigated Negative Declaration which was adopted by EMWD in August 2018. However, approximately 100 linear feet of 30-inch pipeline constructed between the Cactus II Feeder pipelines and the proposed treatment and blending plant facilities are included as part of this project.

Pipelines would be installed using open cut trench construction, as well as trenchless boring techniques. Open cut excavation would be used in existing roadways, except at crossings of existing facilities, utilities, and storm channels. Pipelines installed using open cut methods would include a trenching depth of 3 to 4 feet. The estimated trench width would be equal to 2 feet plus the pipeline diameter, for a width of up to 4 feet. When trenchless techniques are required, pipelines would be constructed using “jack and bore” methods. For this construction method, pits would be dug on either side of the surface feature to be avoided (e.g. storm channel or existing utilities). The pits are typically 10 to 15 feet wide and 10 to 20 feet long for the receiving pit and up to 50 feet long for the jacking pit. The depth would depend on the feature to be avoided.

Treatment Plant

The proposed treatment plant would include granular activated carbon contactors, a blending facility, a potable water distribution pump station and a chlorine residual injection system. A nitrate treatment facility would also need to be constructed at the centralized treatment plant site to be used when blend water of sufficient quality is not available. EMWD has identified two potential sites for the treatment plant.

The raw water from the extraction wells will be treated and blended with imported water from Metropolitan to meet drinking water standards. The water would then be delivered to a large diameter transmission pipeline in the potable water system and conveyed to other parts of EMWD’s service area. The water would be disinfected prior to discharging into the potable water system.

1.3 Area of Potential Effects

36 Code of Federal Regulations (CFR) 800.16(d) defines a project APE as the “geographic area or areas within which a project may directly or indirectly cause changes in the character or use of historic properties if any such property exists.” The APE generally depicts all areas expected to be affected by the proposed project, including construction staging areas. For this study, the APE encompasses the project disturbance footprint associated with the installation of the pipeline, along with a 10-foot-wide buffer on either side of the alignment. The APE also includes the proposed well extraction and treatment plant sites. As shown in Figures 3a and 3b, large portions of the horizontal APE lie within existing roadways along Cottonwood Avenue, Indian Street, Alessandro Boulevard, Sweet Grass Drive, Flaming Arrow Drive, Perris Boulevard, Kitching Street, Gentian Avenue, Santiago Avenue, Patricia Street, and Los Cabos Drive. In total, the horizontal APE encompasses approximately 67.60 acres.

The APE must also be considered as a three-dimensional space and includes any ground disturbance associated with the project. Pipelines would be constructed in existing roadways using an open cut method, except at crossings of existing facilities, utilities, and storm channels. Pipelines installed using open cut methods would include a trenching depth of 3 to 4 feet. When trenchless techniques are required, pipelines would be constructed using jack and bore technologies, which may reach depths of up to 40 feet below the ground surface. Finally, the vertical depth of the APE for the proposed well locations is estimated to reach 1,100 feet below ground surface. Because most of the project elements will be subterranean, no indirect effects (i.e., visual, auditory, or atmospheric) are anticipated for the project.

1.4 Project Personnel

Rincon Archaeologist and Principal Investigator Tiffany Clark, PhD, Registered Professional Archaeologist (RPA) provided management oversight for this cultural resources study. Dr. Clark meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology (National Park Service 1983). Staff archaeologist Lindsay Porras, MA, RPA, completed the records search for the project. Staff Architectural Historian James Williams, MA, assisted with the Native American outreach and local historic group consultation. Archaeologist Gena Granger, MA, RPA performed the field survey and assisted in the preparation of this report. Geographic Information Systems Analyst Allysen Valencia prepared the figures found in this report. Principal Jennifer Haddow, PhD, reviewed this report for quality control.

2 Regulatory Setting

This section includes a discussion of the applicable federal, state, and local laws, ordinances, regulations, and standards governing cultural resources, to which the proposed project should adhere before and during implementation.

2.1 Federal

National Historic Preservation Act

The proposed project is considered a federal undertaking due to the potential for federal funding; it is, therefore, subject to Section 106 of the NHPA, which applies when a project, activity, or program is funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including projects carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval. Cultural resources are considered during federal undertakings chiefly under Section 106 of the NHPA of 1966 (as amended) and through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), and the National Environmental Policy Act. Properties of traditional, religious, and cultural importance to Native Americans are considered under Section 101 (d)(6)(A) and Section 106 (36 CFR 800.3-800.10) of the NHPA. Other federal laws governing cultural resources include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of the NHPA (16 United States Code 470f) requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance is assessed of any adversely affected historic property and mitigation measures are proposed to resolve the adverse effects to an acceptable level. Historic properties are those significant cultural resources listed in or are eligible for listing in the National Register of Historic Properties (NRHP). Generally, districts, sites, buildings, structures, and object that possess integrity are eligible for inclusion in the NRHP if they meet the following the criteria (36 CFR 60.4):

a. Are associated with events that have made a significant contribution to the broad patterns of our history
b. Are associated with the lives of persons significant in our past
c. Embody the distinctive characteristics of a type, period, or method of installation, 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
d. Have yielded, or may be likely to yield, information important in prehistory or history

Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures having been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for NRHP listing, unless they satisfy certain conditions. In general,

a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

2.2 State

California Environmental Quality Act

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC], Section 21084.1) or tribal cultural resources (PRC Section 21074[a][1][A]-[B]). A historical resource is a resource listed, or determined to be eligible for listing in the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or an object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be *historically significant* (State CEQA Guidelines, Section 15064.5[a][1-3]).

A resource shall be considered *historically significant* if it meets any of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2) Is associated with the lives of persons important to our past
3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4) Has yielded, or may be likely to yield, information important in prehistory or history

Generally, a cultural resource must be at least 50 years of age to be considered for listing on the CRHR. Resources that have achieved significance within the past 50 years may also be eligible for inclusion in the CRHR, provided enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource (Office of Historic Preservation n.d.:3).

If it can be demonstrated a project will cause damage to a *unique archaeological resource*, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b]).

PRC Section 21083.2(g) defines a *unique archaeological resource* as an artifact, object, or site about which it can be demonstrated clearly that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2) Has a special and particular quality such as being the oldest of its type or the best available example of its type
3) Is directly associated with a scientifically recognized important prehistoric or historic event or person

Assembly Bill 52

California Assembly Bill 52 (AB 52) was enacted July 1, 2015; it expands CEQA by defining a new resource category called *tribal cultural resources* (TCR). AB 52 establishes "a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a

significant effect on the environment" (PRC Section 21084.2). It further states the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a TCR, when feasible (PRC Section 21084.3).

PRC Section 21074(a)(1)(A) and (B) defines TCRs as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria:

1) Listed or eligible for listing in the CRHR, or in a local register of historical resources, as defined in PRC Section 5020.1(k)
2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe

AB 52 also establishes a formal consultation process for California tribes regarding TCRs. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those requesting notice of projects proposed within the jurisdiction of the lead agency. The consultation process for a project must take place prior to the adoption of a negative declaration or mitigation negative declaration or the certification of an environmental impact report.

3 Natural and Cultural Setting

3.1 Natural Setting

The project APE lies within the Moreno Valley which is bounded by the Badlands to the east, Perris Valley to the south, the Box Spring Mountains to the north, and Sycamore Canyon to the west. The nearest major body of water is the Perris Reservoir, which is located approximately five miles to the southeast. The elevation of the project site ranges from 1,500 to 1,580 feet above mean sea level. Most of the project APE is developed and characterized by a mix of residential, commercial, and industrial uses.

3.2 Cultural Setting

During the 20th century, many archaeologists developed chronological sequences to explain prehistoric cultural changes in all or portions of southern California (c.f., Jones and Klar 2007; Moratto 1984). Wallace (1955, 1978) devised a prehistoric chronology for the southern California region based on early studies and focused on data synthesis that included four horizons: Early Man, Milling Stone, Intermediate, and Late Prehistoric. Though initially lacking the chronological precision of absolute dates (Moratto 1984: 159), Wallace's (1955) synthesis has been modified and improved using thousands of radiocarbon dates obtained by southern California researchers over recent decades (Byrd and Raab 2007: 217; Koerper and Drover 1983; Koerper et al. 2002; Mason and Peterson 1994). The composite prehistoric chronological sequence for southern California is based on Wallace (1955), Warren (1968), and later studies including Koerper and Drover (1983).

Early Man Horizon (10,000 – 6000 BCE)

Numerous pre-8000 BCE sites have been identified along the mainland coast and Channel Islands of southern California (c.f., Erlandson 1991; Johnson et al. 2002; Jones and Klar 2007; Moratto 1984; Rick et al. 2001: 609). The Arlington Springs site on Santa Rosa Island produced human femurs dated to approximately 13,000 years ago (Arnold et al. 2004; Johnson et al. 2002). On nearby San Miguel Island, human occupation at Daisy Cave (SMI-261) has been dated to nearly 13,000 years ago and included basketry greater than 12,000 years old, the earliest on the Pacific Coast (Arnold et al. 2004).

Although few Clovis- or Folsom-style fluted points have been found in southern California (e.g., Dillon 2002; Erlandson et al. 1987), Early Man Horizon sites are associated generally with a greater emphasis on hunting than later horizons. Recent data indicate the Early Man economy was a diverse mixture of hunting and gathering, including a significant focus on aquatic resources in coastal areas (e.g., Jones et al. 2002) and on inland Pleistocene lakeshores (Moratto 1984). A warm and dry 3,000-year period called the Altithermal began around 6000 BCE. The conditions of the Altithermal are likely responsible for the change in human subsistence patterns at this time, including a greater emphasis on plant foods and small game.

Milling Stone Horizon (6000 – 3000 BCE)

The Milling Stone Horizon is defined as "marked by extensive use of milling stones and mullers, a general lack of well-made projectile points, and burials with rock cairns" (Wallace 1955: 219). The dominance of such artifact types indicates a subsistence strategy oriented around collecting plant foods and small animals. A broad spectrum of food resources was consumed including small and large terrestrial mammals, sea mammals, birds, shellfish and other littoral and estuarine species, near-shore fishes, yucca, agave, and seeds and other plant products (Kowta 1969; Reinman 1964). Variability in artifact collections over time and from the coast to inland sites indicates that Milling Stone Horizon subsistence strategies adapted to environmental conditions (Byrd and Raab 2007: 220). Locally available tool stone dominates lithic artifacts associated with Milling Stone Horizon sites; ground stone tools, such as manos and metates, and chopping, scraping, and cutting tools, are common. Kowta (1969) attributes the presence of numerous scraper-plane tools in Milling Stone Horizon collections to the processing of agave or yucca for food or fiber. The mortar and pestle, associated with acorns or other foods processed through pounding, were first used during the Milling Stone Horizon and increased dramatically in later periods (Wallace 1955, 1978; Warren 1968).

Two types of artifacts considered diagnostic of the Milling Stone period are the cogged stone and discoidal, most of which have been found on sites dating between 4,000 and 1,000 BCE (Moratto 1984: 149), though possibly as far back as 5,500 BCE (Couch et al. 2009). The cogged stone is a ground stone object with gear-like teeth on the perimeter and is produced from a variety of materials. The function of cogged stones is unknown, but many scholars have postulated ritualistic or ceremonial uses (c.f., Dixon 1968: 64-65; Eberhart 1961: 367) based on the materials used and their location near to burials and other established ceremonial artifacts as compared to typical habitation debris. Similar to cogged stones, discoidals are found in the archaeological record subsequent to the introduction of the cogged stone. Cogged stones and discoidals were often buried purposefully, or "cached." They are most common in sites along the coastal drainages from southern Ventura County southward and are particularly abundant at some Orange County sites, although a few specimens have been found inland as far east as Cajon Pass (Dixon 1968: 63; Moratto 1984: 149). Cogged stones have been collected in Riverside County and their distribution appears to center on the Santa Ana River basin (Eberhart 1961), within which the site lies.

Intermediate Horizon (3000 BCE – CE 500)

Wallace's Intermediate Horizon dates from approximately 3000 BCE - CE 500 and is characterized by a shift toward a hunting and maritime subsistence strategy, as well as greater use of plant foods. During the Intermediate Horizon, a noticeable trend occurred toward greater adaptation to local resources including a broad variety of fish, land mammal, and sea mammal remains along the coast. Tool kits for hunting, fishing, and processing food and materials reflect this increased diversity, with flake scrapers, drills, various projectile points, and shell fishhooks being manufactured.

Mortars and pestles became more common during this transitional period, gradually replacing manos and metates as the dominant milling equipment. Many archaeologists believe this change in milling stones signals a change from the processing and consuming of hard seed resources to the increasing reliance on acorn (c.f., Glassow et al. 1988; True 1993). Mortuary practices during the Intermediate typically included fully flexed burials oriented toward the north or west (Warren 1968: 2-3).

Late Prehistoric Horizon (CE 500 – Historic Contact)

During Wallace's (1955, 1978) Late Prehistoric Horizon the diversity of plant food resources and land and sea mammal hunting increased even further than during the Intermediate Horizon. More classes of artifacts were observed during this period and high quality exotic lithic materials were used for small finely worked projectile points associated with the bow and arrow. Steatite containers were made for cooking and storage and an increased use of asphalt for waterproofing is noted. More artistic artifacts were recovered from Late Prehistoric sites and cremation became a common mortuary custom. Larger, more permanent villages supported an increased population size and social structure (Wallace 1955: 223).

Warren (1968) attributes this dramatic change in material culture, burial practices, and subsistence focus to the westward migration of desert people he called the Takic, or Numic, Tradition in Los Angeles, Orange, and western Riverside counties. This Takic Tradition was formerly referred to as the "Shoshonean wedge" (Warren 1968), but this nomenclature is no longer used to avoid confusion with ethnohistoric and modern Shoshonean groups (Heizer 1978: 5; Shipley 1978: 88, 90). The Takic expansion remains a major question in southern California prehistory and has been a matter of debate in archaeological and linguistic research. Linguistic, biological, and archaeological evidence supports the hypothesis Takic peoples from the Southern San Joaquin Valley and/or western Mojave Desert entered southern California ca. 3,500 years ago to occupy the Los Angeles/Orange County area (Sutton 2009). Modern Gabrieleño/Tongva in western Riverside County are generally considered by archaeologists to be descendants of these prehistoric Uto-Aztecan, Takic-speaking populations who settled along the California coast during the Late Prehistoric Horizon. Sutton argues surrounding Cupan groups (Serrano, Cahuilla, Cupeño, and Luiseño), were biologically Yuman peoples who were in the area prior to the Takic expansion but adopted Takic languages around 1,500 years ago.

3.3 Ethnographic Context

The project site is situated in an area near the boundaries of several Native American groups anthropologists documented in the early 20th century (e.g., Kroeber 1908). The historically identified territories occupied by the Cahuilla, Luiseño, Serrano, and Gabrieleño all exist within a 25-mile range of the project site. While these boundaries are based on interviews with informants and research in archives, such as the records of the Hispanic Catholic Missions in the region, it is likely such boundaries were not static; rather, they were probably fluid and may have changed through time. Below are synopses of ethnographic data for each of the four Native American groups.

Cahuilla

The project site is situated in the vicinity historically occupied by a Native American group known as the Cahuilla, though near the boundary with the Juaneño and Luiseño (Bean 1978; Heizer 1978; Kroeber 1925). The term Cahuilla likely derived from the native word káwiya, meaning "master" or "boss" (Bean 1978: 575). Traditional Cahuilla ethnographic territory extended west to east from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from the San Jacinto Valley to the San Bernardino Mountains.

The Cahuilla, like their neighbors to west, the Luiseño and Juaneño, and the Cupeño to the south, are speakers of a Cupan language. The Cupan languages are part of the Takic linguistic subfamily of the Uto-Aztecan language family. Anthropologists posit the Cahuilla migrated to southern California

approximately 2,000 to 3,000 years ago, most likely from the southern Sierra Nevada mountain ranges of east-central California with other Takic speaking social groups (Moratto 1984: 559).

Cahuilla social organization was hierarchical and contained three primary levels (Bean 1978: 580). The highest level was the cultural nationality, encompassing everyone speaking a common language. The next level included the two patrimoieties of the Wildcats (tuktum) and the Coyotes (‘istam). Every clan of the Cahuilla was in one or the other of these moieties. The lowest level consisted of the numerous political-ritual-corporate units called sibs, or a patrilineal clan (Bean 1978: 580).

Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water. Each lineage group maintained their own houses (kish) and granaries, and constructed ramadas for work and cooking. Sweathouses and song houses (for non-religious music) were also often present. Each community also had a separate house for the lineage or clan leader. Ceremonial houses associated with clan leaders were where major religious ceremonies were held. Houses and ancillary structures were often spaced apart, and a “village” could extend over a mile or two. Each lineage had ownership rights to various resource collecting locations, “including food collecting, hunting, and other areas. Individuals also owned specific areas or resources, e.g., plant foods, hunting areas, mineral collecting places, or sacred spots used only by shamans, healers and the like” (Bean 1990:2).

The Cahuilla hunted a variety of game, including mountain sheep, cottontail, jackrabbit, mice, and wood rats, as well as predators such as mountain lion, coyote, wolf, bobcat, and fox. Various birds were consumed, including quail, duck, and dove, plus various types of reptiles, amphibians, and insects. The Cahuilla employed a wide variety of tools and implements to gather and collect food resources. For hunting, these included the bow and arrow, traps, nets, slings and blinds for hunting land mammals and birds, and nets for fishing. Rabbits and hares were commonly brought down by the throwing stick, but when communal hunts were organized, the Cahuilla often utilized clubs and very large nets to capture these animals.

Foodstuffs were processed using a variety of tools, including portable stone mortars, bedrock mortars and pestles, basket hopper mortars, manos and metates, bedrock grinding slicks, hammerstones and anvils, and many others. Food was consumed from a number of woven and carved wood vessels and pottery vessels. The ground meal and unprocessed hard seeds were stored in large finely woven baskets, and the unprocessed mesquite beans were stored in large granaries woven of willow branches and raised off the ground on platforms to keep it from vermin. The Cahuilla made pottery vessels and traded with the Yuman-speaking groups across the Colorado River and to the south.

The Cahuilla had adopted limited agricultural practices by the time Euro-Americans traveled into their territory. Bean has suggested their “proto-agricultural techniques and a marginal agriculture” consisting of beans, squash and corn may have been adopted from the Colorado River groups to the east (Bean 1978: 578). Certainly by the time of the first Romero Expedition in 1823-24, the Cahuilla were observed growing corn, pumpkins, and beans in small gardens around springs near the town of Thermal in the Coachella Valley (Bean and Mason 1962: 104). The introduction of European plants, such as barley and other grain crops, suggest an interaction with the missions or local Mexican rancheros. Despite the increasing use and diversity of crops, no evidence indicates small-scale agriculture was anything more than a supplement to Cahuilla subsistence, and it apparently did not alter social organization.

By 1819, several Spanish mission outposts, known as *asistencias*, were established near Cahuilla territory at San Bernardino and San Jacinto, including the asistencia near Redlands. Cahuilla interaction with Europeans at this time was not as intense as it was for native groups living along the coast, likely due to the local topography and lack of water which made the area less attractive to colonists. By the 1820s, European interaction increased as mission ranchos were established in the region and local Cahuilla were employed to work on them.

The Bradshaw Trail was established in 1862 and was the first major east-west stage and freight route through the Coachella Valley. Traversing the San Gorgonio Pass, the trail connected gold mines on the Colorado River with the coast. Bradshaw based his trail on the Cocomaricopa Trail, with maps and guidance provided by local Native Americans. Journals by early travelers along the Bradshaw Trail told of encountering Cahuilla villages and walk-in wells during their journey through the Coachella Valley. The continued influx of immigrants into the region introduced the Cahuilla to European diseases. The single worst recorded event was a smallpox epidemic which swept through Southern California in 1862-63, significantly reducing the Cahuilla population. By 1891, only 1,160 Cahuilla remained in what was left of their territory, down from an aboriginal population of 6,000–10,000 (Bean 1978: 583-584). By 1974, approximately 900 people claimed Cahuilla descent, most of whom resided on reservations.

Between 1875 and 1891, the United States established ten reservations for the Cahuilla in their traditional territory. These include the Agua Caliente, Augustine, Cabazon, Cahuilla, Los Coyotes, Morongo, Ramona, Santa Rosa, Soboba, and Torres-Martinez reservations (Bean 1978: 585). Other groups share four of the reservations, including the Chemehuevi, Cupeño, and Serrano.

Luiseño

The project site is located at the northern extent of the area traditionally occupied by the Luiseño, who inhabited the north half of San Diego County and western edge of Riverside County (Bean and Shipek 1978; Heizer 1978; Kroeber 1925). The term Luiseño was applied to the Native Americans managed by Mission San Luis Rey and later used for the Payomkawichum nation living in the area where the mission was founded (Mithun 2001: 539-540). Luiseño territory encompassed the drainages of the San Luis Rey River and the Santa Margarita River, covering numerous ecological zones (Bean and Shipek 1978).

Prior to European contact, the Luiseño lived in permanent, politically autonomous villages, ranging in size from 50 to 400 people, and associated seasonal camps. Each village controlled a larger resource territory and maintained ties to other villages through trade and social networks. Trespassing in another village's resource area was cause for war (Bean and Shipek 1978). Villages consisted of dome-shaped dwellings (kish), sweat lodges, and a ceremonial enclosure (vamkech). Leadership in the villages focused on the chief, or Nota, and a council of elders (puuplem). The chief controlled religious, economic, and war-related activities (Bean and Shipek 1978).

The Luiseño religion was focused on Chinigchinich, a mythological hero. Religious rituals took place in a brush enclosure housing a representation of Chinigchinich. Ritual ceremonies included puberty initiation rites, burial and cremation ceremonies, hunting rituals, and peace rituals (Bean and Shipek 1978).

Luiseño subsistence focused on the acorn and was supplemented by gathering other plant resources, and shellfish, fishing, and hunting. Plant foods typically included pine nuts, seeds from various grasses, manzanita, sunflower, sage, chia, lemonade berry, prickly pear, and lamb's-quarter. Acorns were leached and served in various ways. Seeds were ground. Prey included deer, antelope,

rabbit, quail, ducks, and other birds. Fish were caught in rivers and creeks. Fish and sea mammals were taken from the shore or dugout canoes. Shellfish were collected from the shore and included abalone, turbans, mussels, clams, scallops, and other species (Bean and Shipek 1978).

Serrano

The Serrano are another Native American group who occupied territory near the project site. The Serrano occupied an area in and around the San Bernardino Mountains between approximately 450 and 3,350 meters (1,500 to 11,000 feet) above mean sea level. Their territory extended west of the Cajon Pass, east past Twentynine Palms, north of Victorville, and south to Yucaipa Valley. The Serrano language is part of the Serran division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 2006: 539, 543). The two Serran languages, Kitanemuk and Serrano, are closely related. Kitanemuk lands were northwest of Serrano lands. Serrano was spoken originally by a relatively small group located in the San Bernardino and Sierra Madre mountains, and the term "Serrano" has come to be ethnically defined as the name of the people in the San Bernardino Mountains (Kroeber 1925: 611). The Vanyume, who lived along the Mojave River and associated Mojave Desert areas and are also referred to as the Desert Serrano, spoke either a dialect of Serrano or a closely related language (Mithun 2001: 543). Year-round habitation tended to be located on the desert floor, at the base of the mountains, and up into the foothills, with all habitation areas requiring year-round water sources (Bean and Smith 1978; Kroeber 1908).

Most Serrano lived in small villages located near water sources (Bean and Smith 1978: 571). Houses measured 3.7 to 4.3 meters (12 to 14 feet) in diameter. They were domed and constructed of willow branches and tule thatching; they were occupied by a single, extended family. Many of the villages had a ceremonial house, used both as a religious center and as the residence of the lineage leaders. Additional structures in a village might include granaries and a large circular subterranean sweathouse. The sweathouses were typically built along streams or pools. A village was usually composed of at least two lineages. The Serrano were loosely organized along patrilineal lines and associated themselves with one of two exogamous moieties or "clans"—the Wahiyam (coyote) or the Tukum (wildcat) moiety.

The subsistence economy of the Serrano was one of hunting and collecting plant goods, with occasional fishing (Bean and Smith 1978: 571). They hunted large and small animals, including mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Plant staples consisted of seeds; acorn nuts of the black oak; piñon nuts; bulbs and tubers; and shoots, blooms, and roots of various plants, including yucca, berries, barrel cacti, and mesquite. The Serrano used fire as a management tool to increase yields of specific plants, particularly chía.

Trade and exchange were an important aspect of the Serrano economy. Those living in the lower-elevation, desert floor villages traded foodstuffs with people living in the foothill villages who had access to a different variety of edible resources. In addition to inter-village trade, ritualized communal food procurement events, such as rabbit and deer hunts and piñon, acorn, and mesquite nut-gathering events, integrated the economy and helped distribute resources available in different ecozones.

Contact between Serrano and Europeans was minimal prior to the early 1800s. As early as 1790, however, Serrano began to be drawn into mission life (Bean and Vane 2002). More Serrano were relocated to Mission San Gabriel in 1811 after a failed indigenous attack on the mission. Most of the remaining western Serrano were moved to an asistencia built near Redlands in 1819 (Bean and Smith 1978: 573).

A smallpox epidemic in the 1860s killed many indigenous southern Californians, including many Serrano (Bean and Vane 2002). Oral history accounts of a massacre in the 1860s at Twentynine Palms may have been part of a larger American military campaign lasting 32 days (Bean and Vane 2002: 10). Surviving Serrano sought shelter at Morongo with their Cahuilla neighbors; Morongo later became a reservation (Bean and Vane 2002). Other survivors followed the Serrano leader Santos Manuel down from the mountains and toward the valley floors and eventually settled what later became the San Manuel Band of Mission Indians Reservation, formally established in 1891.

In 2003, most Serrano lived either on the Morongo or San Manuel reservations (California Indian Assistance Program 2003). The Morongo Band of Mission Indians of the Morongo Reservation, established through presidential executive orders in 1877 and 1889, includes both Cahuilla and Serrano members. Established in 1891, the San Manuel Band of Mission Indians Reservation includes Serrano. Both Morongo and San Manuel are federally recognized tribes. People of both reservations participate in cultural programs to revitalize traditional languages, knowledge, and practices.

Gabrieleño

The project site is also located at the eastern edge of an area historically occupied by the Gabrieleño. Archaeological evidence points to the Gabrieleño arriving in the Los Angeles Basin sometime around 500 BCE; however, this has been a subject of debate. Many contemporary Gabrieleño identify themselves as descendants of the indigenous people living across the plains of the Los Angeles Basin and use the native term Tongva (King 1994). This term is used in the remainder of this section to refer to the pre-contact inhabitants of the Los Angeles Basin and their descendants. Surrounding native groups included the Chumash and Tataviam to the northwest, the Serrano and Cahuilla to the northeast, and the Juaneño and Luiseño to the southeast.

Tongva lands encompassed the greater Los Angeles Basin and three Channel Islands, San Clemente, San Nicolas, and Santa Catalina. The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. A total tribal population has been estimated of at least 5,000 (Bean and Smith 1978: 540), but recent ethnohistoric work suggests a number approaching 10,000 (O'Neil 2002). Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule holding up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996: 27). Archaeological sites composed of villages with various sized structures have been identified.

The Tongva subsistence economy was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Like most native Californians, acorns were the staple food (an established industry by the time of the early Intermediate Period). Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). Fresh water and saltwater fish, shellfish, birds, reptiles, and insects, as well as large and small mammals, were also consumed (Bean and Smith 1978: 546; Kroeber 1925: 631–632; McCawley 1996: 119–123, 128–131).

A wide variety of tools and implements were used by the Tongva to gather and collect food resources. These included the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks. Groups residing near the ocean used oceangoing plank canoes and tule balsa

canoes for fishing, travel, and trade between the mainland and the Channel Islands (McCawley 1996: 7). Tongva people processed food with a variety of tools, including hammerstones and anvils, mortars and pestles, manos and metates, strainers, leaching baskets and bowls, knives, bone saws, and wooden drying racks. Food was consumed from a variety of vessels. Catalina Island steatite was used to make ollas and cooking vessels (Blackburn 1963; Kroeber 1925: 629; McCawley 1996: 129–138).

At the time of Spanish contact, the basis of Tongva religious life was the Chinigchinich cult, centered on the last of a series of heroic mythological figures. Chinigchinich gave instruction on laws and institutions, and taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925: 637–638). The Chinigchinich religion seems to have been relatively new when the Spanish arrived. It was spreading south into the Southern Takic groups even as Christian missions were being built and may represent a mixture of native and Christian belief and practices (McCawley 1996: 143–144).

Deceased Tongva were either buried or cremated, with inhumation more common on the Channel Islands and the neighboring mainland coast and cremation predominating on the remainder of the coast and in the interior (Harrington 1942; McCawley 1996: 157). At the behest of the Spanish missionaries, cremation essentially ceased during the post-Contact period (McCawley 1996: 157).

3.4 History

The post-contact history of California is generally divided into three epochs: the Spanish period (1769–1822), the Mexican period (1822–1848), and the American period (1848–present). Each of these periods is described briefly below.

Spanish Period (1769–1822)

Spanish exploration of what was then known as Alta (upper) California began when Juan Rodríguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968, Rolle 2003). Spanish entry into what was to become Riverside County did not occur until 1774 when Juan Bautista de Anza led an expedition from Sonora, Mexico to Monterey in northern California (Lech 1998).

In 1769, Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement at Mission San Diego de Alcalá. This was the first of 21 missions erected by the Spanish between 1769 and 1823. The establishment of the missions marks the first sustained occupation of Alta California by the Spanish. In addition to the missions, four presidios and three pueblos (towns) were established throughout the state (State Lands Commission 1982). In 1819, an asistencia was established near present-day Redlands to serve as an outpost for cattle grazing activities carried out by Mission San Gabriel's Rancho San Bernardino (San Bernardino County 2017). Around the same time, Native Americans living at the asistencia were directed to dig a zanja (irrigation ditch) to serve the asistencia and surrounding area.

During this period, Spain also deeded ranchos to prominent citizens and soldiers, though very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population

(Engelhardt 1927a). The missions were responsible for administrating to the local Indians as well as converting the population to Christianity (Engelhardt 1927b). The influx of European settlers brought the local Native American population in contact with European diseases which they had no immunity against, resulting in catastrophic reduction in native populations throughout the state (McCawley 1996).

Mexican Period (1822–1848)

The Mexican Period commenced when news of the success of the Mexican War of Independence (1810-1821) reached California in 1822. This period saw the federalization of mission lands in California with the passage of the Secularization Act of 1833. This Act enabled Mexican governors in California to distribute former mission lands to individuals in the form land grants. Successive Mexican governors made more than 700 land grants between 1822 and 1846, putting most of the state's lands into private ownership for the first time. About 15 land grants (ranchos) were located in Riverside County. The project area is situated in what was once Rancho San Jacinto, which included much of the San Jacinto Plains stretching from Box Springs to the San Jacinto Mountains and between the Badlands and Temecula (Shumway 2007).

American Period (1848–Present)

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for ceded territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming, and pay an additional $3.25 million to settle American citizens claims against Mexico. Settlement of southern California increased dramatically in the early American Period. Many ranchos in the county were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns.

The discovery of gold in northern California in 1848 led to the California Gold Rush, despite the first California gold being previously discovered in southern California at Placerita Canyon in 1842 (Guinn 1977; Workman 1935: 26). Southern California remained dominated by cattle ranches in the early American period, though droughts and increasing population resulted in farming and more urban professions supplanting ranching through the late nineteenth century. In 1850, California was admitted into the United States and by 1853, the population of California exceeded 300,000.

Local History

Throughout the second half of the 19th century, migration throughout the state increased, in particular following completion of the transcontinental railroad in 1869. In 1893, Riverside County was created from portions of San Bernardino and San Diego Counties. Early settlers to the Moreno Valley area were engaged in dry farming, as a reliable water source had not yet been secured.

Following his success in the establishment of and provision of reliable water to the community of Redlands, Frank E. Brown progressed to similar successes in Alessandro, Perris, and Moreno. In 1890, he founded the Bear Valley and Alessandro Development Company and recorded the first subdivision of the area. "Map No. 1" divided roughly 21,440-acres into ten-acre farm plots, with the 280-acre townsite of Moreno located at the intersection of Redlands and Alessandro Boulevard. This initial subdivision included the project site (Block No. 54; Lot/Parcel No. 1-8). In the same year and also with heavy involvement from Brown, the Alessandro Irrigation District was established, and construction began on an intricate series of pipelines to bring water to the valley (Lech 2004).

The arrival of water, via the Moreno Tunnel, in Moreno in 1891 led to increased investment in the area's agricultural economy. Following this development, large-scale fruit and citrus farms were established in the area. This development provided only a temporary boom, as lawsuits over water rights led to a loss of water delivery in the Moreno Valley in 1899. As a result, the valley's population greatly decreased. Some moved their homes to the city of Riverside; those who remained engaged in the dry farming of hay, grain, and grapes. Public and private wells were eventually produced and by 1912 the Moreno Mutual Water Company had identified a reliable source of water. As a result, the area's population again increased, and the area resumed citrus production along with much of Riverside County (Holmes 1912).

Originally established as Alessandro Flying Training Field in 1918, March Field was constructed in the Moreno Valley as the country anticipated entry into World War I. While March Field closed briefly in the 1920, it reopened in 1927 and eventually expanded to encompass 7,000-acres. March Field has played a key role in providing skilled crews for many international conflicts and remains in operation as a reserve base today (*Riverside Magazine* 2019*)*. The founding and lasting presence of March Field has contributed to the expansion of the Moreno Valley, as amenities for those stationed there have remained a necessity since its founding.

The Moreno Valley experienced steady growth throughout the 1970s. As residential development increased, so too did recreational amenities. The Riverside International Raceway and the Lake Perris Recreation Area were established in 1953 and 1973 respectively. The valley experienced a boom in the 1980s; the decade saw the population increase two-fold (from roughly 19,000 to almost 50,000). While votes for incorporation failed in 1968 and 1983, in 1984 the City of Moreno Valley was officially incorporated. The city has continued to expand in recent decades and today it is largely occupied by suburban development. In 2010, its population was estimated at 193,365 (U.S. Census Bureau 2010).

4 Background and Methods

4.1 Cultural Resources Records Search

California Historical Resources Information Center

On January 6, 2020, Rincon conducted a search of the California Historical Resources Information System at the Eastern Information Center at the University of California, Riverside. The search was conducted to identify any previously recorded cultural resources and cultural resources studies within the APE and a 0.5-mile radius surrounding it. Rincon also reviewed the NRHP, the CRHR, the Archaeological Determination of Eligibility, and the California State Historic Resources Inventory list. These results are summarized below with additional information provided in Appendix A (Confidential).

The records search found 60 previously identified cultural resource studies completed within 0.5 mile of the project APE between 1953 and 2019 (Table 1). Five of these previous studies (RI-0182, RI-1665, RI-1843, RI-7127, and RI-10273) intersect the project corridor. The previous studies cover less than 10 percent of the current project APE.

Table 1 Previously Conducted Cultural Resources Studies within a 0.5-mile Radius of the APE

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-00002	Rogers, Malcom J.	1953	*Miscellaneous Field Notes – Riverside County, San Diego Museum of Man*	Outside
RI-00026	Akin, Margie	1971	*A Survey of the Archaeological Resources of the Santa Ana and San Jacinto River Basins*	Outside
RI-00130	Clough, Helen	1974	*Filed Notes for the Archaeological Survey of PL984 Water Systems Additions*	Outside
RI-00133	King, Thomas F., Marry Brown, Gerrit Fenenge and Claudia Nissley	1974	*Archaeological Impact Evaluation: Southern California Edison Company's Devers-Vista 220 kV Transmission Line, Riverside County, California*	Outside
RI-00137	O'Conell, James F., Philip J. Wilke, Thomas F. King, and Carol L. Mix	1974	*Perris Reservoir Archaeology, Late Prehistoric Demographic Change in Southeastern California*	Outside
RI-00161	Greenwood, Roberta S.	1975	*Paleontological, Archaeological, Historical, and Cultural Resources, West Coast-Midwest Pipeline Project, Long Beach to Colorado River*	Outside
RI-00182	Weaver, Richard A.	1975	*Environmental Impact Evaluation: Archaeology of Brodiaea Avenue, Pl 984, Water Systems Addition, Riverside County, California*	Inside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-00535	Bean, Lowell J., Sylvia Brakke Vane, Matthew C. Hall, Harry Lawton, Richard Logan, Lee Gooding Massey, John Oxendine, Charles Rozaire, and David P. Whistler	1979	*Cultural Resources and the Devers-Mira 500 kV Transmission Line Route (Valley to Mira Loma Section)*	Outside
RI-00742	Wilke, Philip J.	1979	*Environmental Impact Evaluation: An Archaeological Assessment of 17.64 Acres Considered for Change of Zone (CZ 2707), Southeast of Sunnymead, Riverside County, California*	Outside
RI-01312	Meighan, Clement W.	1975	*Historical Resources in Three Southern California Counties*	Outside
RI-01665	Wirth Associates	1983	*Devers-Serrano-Villa Park Transmission System Supplement to the Cultural Resources Technical Report - Public Review Document and Confidential Appendices*	Inside and Adjacent
RI-01843	Scientific Resource Surveys	1984	*Cultural Resource Survey Report on Wolfskill Ranch*	Inside
RI-01955	Heller, Rod, Tim Tetherow, and C. White	1977	*An Overview of the Sundesert Nuclear Project Transmission System Cultural Resource Investigation*	Outside
RI-01978	Brock, James	1985	*Letter Report: Archaeological Field Reconnaissance of Proposed Post Office Site in Sunnymead, California*	Outside
RI-02050	Perault, Gordon	1985	*Preliminary Historic Inventory - March Air Force Base, California*	Outside
RI-02171	McCarthy, Daniel F.	1987	*Cultural Resources Inventory for the City of Moreno Valley, Riverside County, California*	Outside
RI-03490	McIntosh, Beverly C.	1991	*The Juan Bautista De Anza Trail Past, Present and Future, Baja to Riverside, California*	Outside
RI-03604	Jones, Carleton S.	1992	*The Development of Cultural Complexity Among the Luiseno: A Thesis Presented to the Department of Anthropology, California State University, Long Beach in Partial Fulfillment of the Requirements for the Degree, Master of Arts*	Outside
RI-03693	Foster, John M., James J. Schmidt, Carmen A. Weber, Gwendolyn R. Romani, and Roberta S. Greenwood	1991	*Cultural Resource Investigation: Inland Feeder Project, Metropolitan Water District of Southern California*	Outside and Adjacent

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-03921	Moffit, S.A. and M. C. Hall	1995	*Cultural Resources Survey of Proposed Arco Pipeline Company Rectifier and Block Valve Sites, Located In Riverside and San Bernardino Counties, California*	Outside
RI-04762	Barker, Leo R. and Ann E Huston, Editors	1990	*Death Valley to Deadwood; Kennecott To Cripple Creek. Proceedings of the Historic Mining Conference, January 23-27, 1989, Death Valley National Monument*	Outside
RI-04813	National Park Service	1993	*California Citrus Heritage Recording Project: Photographs, Written Historical and Descriptive Data, Reduced Copies of Measured Drawings For: Arlington Height Citrus Landscape, Gage Irrigation Canal, National Orange Company Packing House, Victoria Bridge, and Union Pacific Railroad Bridge*	Outside
RI-04992	McKenna et al.	2004	*An Architectural Evaluation of Structures Located Within Assessor Parcel Numbers 482-090009-0, -010-0, and 033-0, Within the City of Moreno Valley, Riverside County, California*	Outside
RI-05035	McKenna et al.	2005	*Letter Report: Monitoring at the Site of the Proposed Indian Middle School in the City Of Perris, Riverside County, California*	Outside
RI-05088	Cultural Systems Research, Inc.	2005	*Ethnographic Overview Inland Feeder Pipeline Project*	Outside
RI-05286	Jackson, Adrianna	2000	*Letter Report: Records Search Results for Sprint PCS Facility RV54XC486A (Boxing Club Site), Moreno Valley, Riverside County, California*	Outside
RI-05294	White, Laurie	2000	*Letter Report: Records Search Results for Sprint PCS Facility RV37XC917C (SCE Alessandro Substation), City of Moreno Valley, Riverside County, California*	Adjacent
RI-05795	Kyle, Carolyn E.	2004	*Cultural Resource Assessment for AT&T Wireless Facility 950-031029A located at 24899 Alessandro Boulevard, City of Moreno Valley, Riverside County, California*	Adjacent
RI-06081	Billat, Lorna	2004	*Letter Report: Proposed Cellular Tower Project in Riverside County, California, Site Name/Number: CA-8868A/ Lasselle*	Adjacent
RI-06269	Alexandrowicz, John S.	2006	*An Historical Resources Identification of Alessandro Pointe Project, Tract 34681, 25817 Alessandro Boulevard, City of Moreno Valley, Riverside County, California*	Outside
RI-06278	Ahmet, Koral and Evelyn N. Chandler	2005	*Cultural Resources Survey for a Proposed Bikeway in Moreno Valley, Riverside County, California*	Outside
RI-07127	Jordan, Stacey C.	2007	*Archaeological Survey Report for Southern California Edison Company: Conversion of Overhead to Underground Project on the Rule 20C, Riverside County, California (WO#65777281, AL#6-7227)*	Inside

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-07499	Bonner, Wayne H. and Marnie Aislin-Kay	2007	*Letter Report: Cultural Resource Records Search Results and Site Visit for Royal Street Communications, LLC Candidate LA2360B (Motel 7), 23581 Alessandro Boulevard, Moreno Valley, Riverside County, California*	Outside
RI-07573	Sanka, Jennifer M.	2008	*Phase I Cultural Resources Assessment and Paleontological Records Review, APN 486-070-007, Moreno Valley, Riverside County, California*	Adjacent
RI-07645	Rosenberg, Seth A. and Brian F. Smith	2005	*An Archaeological Survey for the Alessandro Plaza Project, City of Moreno Valley, County of Riverside, California*	Outside
RI-08235	Workman, James E.	2001	*Cupules, A Type of Petroglyphic Rock Art. A Study of the Pitted Boulders in the San Jacinto Wildlife Area and the Lake Perris State Recreational Area*	Outside
RI-08244	McKenna, Jeanette A.	2009	*A Phase I Cultural Resources Investigation of the Proposed Moreno Valley Unified School District K-12 School Site at Indian Street and Cactus Avenue, City of Moreno Valley, Riverside County, California.*	Outside
RI-08554	Hogan, Michael, Bai "Tom" Tang, John Goodman, and Daniel Ballester	2011	*California Living Moreno Valley Project*	Outside
RI-08654	Bonner, Wayne H., Sarah A. Williams, and Kathleen A. Crawford	2011	*Cultural Resources Search and Site Visit Results for T-Mobile USA Candidate IE24173B*	Outside
RI-08688	Bonner, Wayne H.	2011	*Letter Report: Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate IE24226-A*	Outside
RI-08802	Tang, Bai "Tom", Michael Hogan, Deirdre Encarnacion, and Daniel Ballester	2012	*Phase I Archaeological Assessment: Moreno Master Drainage Plan Revision*	Outside
RI-08944	Tang, Bai "Tom" and Michael Hogan	2013	*Historical/Archeological Resources Survey Report, Assessor's Parcel No. 486-280-043, City of Moreno Valley, Riverside County, California*	Outside
RI-08945	Tang, Bai "Tom" and Michael Hogan	2013	*Historical/Archaeological Resources Survey Report, Desilting Basin Site, Boulder Ridge Family Apartments Project, City of Moreno Valley, Riverside County, California*	Outside
RI-09077	McKenna, Jeanette A.	2014	*A Phase I Cultural Resources Survey for the Proposed Walmart Supercenter on Approximately 22.28 Acres of Land in the City of Moreno Valley, Riverside County, California*	Adjacent

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-09311	Wills, Carrie D.	2014	*Cultural Resource Records Search and Site Visit Results for Verizon Wireless Candidate 'Gentian', 16015 North Perris Boulevard, Moreno Valley, Riverside County, California*	Outside
RI-09345	McKenna, Jeanette	2015	*Results of an Archaeological/Paleontological Monitoring Program at the Moreno Valley Unified School District's Bayside Charter Campus in the City of Moreno Valley, Riverside County, California*	Outside
RI-09510	Tang, Bai "Tom"	2016	*Update to Historical/Archaeological Resources Survey Assessor's Parcel No. 486-280-043 (Rocas Grandes Project), City of Moreno Valley, Riverside County, California CRM TECH Contract No. 2980*	Outside
RI-09681	Wills, Carrie D. and Sarah A. Williams	2016	*Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate IE95361A (Alessandro Substation), 15901 Kitching Street, Moreno Valley, Riverside County, California*	Adjacent
RI-09718	Brunzell, David	2016	*Cultural Resources Assessment of the Toby (MCE Design) Project, City of Moreno Valley, Riverside County, California (BCR Consulting Project No. TRF 1608)*	Adjacent
RI-09828	Wilk, Elizabeth	2015	*Addendum to FCC Form 620: Gogh/Ensite #25674 (284941), 15091 Kitching Street, Moreno Valley, Riverside County, California 92551, EBI Project #6115003214/ E-106 File Number 0006967049, FCC_2015_1005_009*	Adjacent
RI-10018	Belcourt, Tria	2016	*Re: Letter Report for Cultural and Paleontological Records Searches for the Brodiaea Site, located in the City of Moreno Valley, Riverside County, California*	Outside
RI-10095	Dooley, Colleen	2002	*Cingular Wireless Cultural Resource Assessment*	Adjacent
RI-10150	Brunzell, David	2016	*Cultural Resources Assessment the Alessandro Apartments Project, City of Moreno Valley, Riverside County, California*	Adjacent
RI-10273	Garrison, Andrew J. and Brian F. Smith	2014	*Phase I Cultural Resources Survey for the Brodiaea Commerce Center Project, City of Moreno Valley, County of Riverside*	Inside
RI-10445	Clark, Fatima and Kyle Garcia	2014	*Cultural Resources Assessment for the Proposed Isla Verde Residential Project, City of Moreno Valley, County of Riverside, California*	Adjacent
RI-10498	Brunzell, David	2018	*Cultural Resources Assessment Moreno Valley Storage Project, City of Moreno Valley, Riverside County, California*	Outside
RI-10691	Curl, Alan	1979	*Phase I Survey of the City of Riverside Final Report*	Outside
RI-10700	Perez, Don	2015	*Cultural Resources Survey Gogh / Ensite #25674 (284941)*	Adjacent

Report Number	Author(s)	Year	Title	Relationship to APE[1]
RI-10827	Williams, Sarah A. and Carrie D. Wills	2019	*Cultural Resource Records Search and Site Visit Results for AT&T Mobility Candidate CSL02876 (Iris Plaza), 16110 Perris Boulevard, Moreno Valley, Riverside County, California (EBI Project Number 6119000825)*	Outside

[1]Adjacent reports are located within 500 feet of the project APE.

Source: Eastern Information Center January 2020

Sixteen cultural resources have been documented within 0.5 mile of the APE (Table 2). These include five prehistoric archaeological sites, two prehistoric isolated artifacts or features, three historic-period archaeological sites, and six historic-period built-environment (buildings and structures) resources. Although none of these known cultural resources are in the project APE, two historic period buildings (P-33-007279 and P-33-007290) and an historic period loading dock (P-33-023936) are located adjacent to the APE (i.e., less than 500 feet). The prehistoric sites, most of which represent bedrock milling features, cluster at the base of a set of unnamed hills lying east of the project APE.

Table 2 Previously Identified Cultural Resources within a 0.5-mile Radius of the APE

Resource Number	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status[1]	Relationship to APE[2]
P-33-000857 (CA-RIV-857)	Prehistoric Site	Seven bedrock milling features	2013 (D. Ballester and D. Perez), 1975 (R. Weaver): 1987 (C. Prior, M. Conroy, B. Neiditch)	Not evaluated for CRHR or NRHP	Outside
P-33-002994 (CA-RIV-2994)	Prehistoric Site	Ten bedrock milling features with an associated hand stone	1984 (Roger Mason)	Not evaluated for CRHR or NRHP	Outside
P-33-003159 (CA-RIV-3159)	Prehistoric Site	Three bedrock milling features	2015 (D. Ballester), 2013 (D. Ballester and D. Perez), 1987 (C. Prior, M. Conroy, B. Neiditch)	Not evaluated for CRHR or NRHP	Outside
P-33-003341 (CA-RIV-3341)	Prehistoric Site	Three bedrock milling features	2013 (D. Ballester and D. Perez), 1987 (C. Prior, M. Conroy, B. Neiditch)	Not evaluated for CRHR or NRHP	Outside
P-33-003342 (CA-RIV-3342)	Prehistoric Site	One bedrock milling feature (no longer extant)	2013 (D. Ballester and D. Perez), 1987 (Barry R. Neiditch)	Not evaluated for CRHR or NRHP	Outside

Resource Number	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status[1]	Relationship to APE[2]
P-33-007276	Historic Building	25780 Alessandro Blvd (single-family residence)	1983 (J. Warner)	Appears eligible for the CRHR and/or NRHP	Outside
P-33-007279	Historic Building	24771 Bay Avenue, (single-family residence with associated outbuildings)	1983 (J. Warner)	Appears eligible for the CRHR and/or NRHP	Adjacent
P-33-007280	Historic Building	24685 Cottonwood Avenue (single family residence)	1983 (J. Warner)	Recommended ineligible for the CRHR and NRHP	Outside
P-33-007290	Historic Building	15168 Perris Boulevard (single-family residence with associated outbuildings)	1983 (J. Warner)	Property recognized as historically significant by local government	Adjacent
P-33-015301	Prehistoric Isolate (artifact)	Pestle fragment	2005 (Evelyn Chandler)	Not evaluated for CRHR or NRHP	Outside
P-33-015454 (CA-RIV-8149)	Historic Site	Building foundations, septic tank, and refuse scatter	2006 (John Alexandrowicz)	Not evaluated for CRHR or NRHP	Outside
P-33-016788	Prehistoric Isolate (feature)	Four prehistoric milling features (out of context)	2007 (J. Sanka)	Not evaluated for CRHR or NRHP	Outside
P-33-023936	Historic Structure	Barron/Lanz Holdings (Ranch/Farm, Loading Dock)	2014 (Jeanette McKenna)	Recommended ineligible for the CRHR and NRHP	Adjacent
P-33-024195 (CA-RIV-11896)	Historic Site	Multi-family property	2015 (Jeanette McKenna)	Not evaluated for CRHR or NRHP	Outside
P-33-028200	Historic Structure	Canal/Aqueduct	2018 (Salvadore Z. Boites)	Recommended ineligible for the CRHR and NRHP	Outside
P-33-028824 (CA-RIV-12934)	Historic Site	Building foundation, power pole, and isolated glass	2019 (Riordan Goodwin)	Not evaluated for CRHR or NRHP	Outside

[1]NRHP = National Register of Historic Places; CRHR = California Register of Historical Resources

[2] Adjacent resources are located within 500 feet of the project APE (Area of Potential Effects).

Source: Eastern Information Center, January 2020

4.2 Native American Consultation

Rincon contacted the Native American Heritage Commission (NAHC) on December 26, 2019 to request a Sacred Lands File search of the APE and a 0.5-mile radius surrounding it. As part of this request, Rincon asked the NAHC to provide a list of Native American groups and/or individuals culturally affiliated with the area who may have knowledge of cultural resources in the APE. The NAHC responded on January 7, 2020, stating the results of the Sacred Lands File search were negative (see Appendix B). The NAHC provided a list of 32 Native American contacts who may have knowledge of cultural resources of Native American origin at the project site. Rincon prepared and mailed letters to each of these groups on January 15, 2020. Appendix B provides an example of the letter sent to the Native American contacts.

On January 17, 2020, Rincon received an email from Alexandra McCleary, Tribal Archaeologist for the San Manuel Band of Mission Indians (SBMI), noting the proposed project is located outside of the Serrano ancestral territory. Ms. McCleary stated SBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.

On January 23, 2020, Rincon received an email from Dorothy Willis of the Los Coyotes Band of Indians Environmental Department. She stated the tribal group had received the notice of the proposed project and is currently reviewing the information. Additionally, Ms. Willis noted Mr. Ray Chapparosa is the current Chairman and not Shane Chapparosa. No further response was received from Ms. Willis.

On January 28, 2020, Rincon received a letter from BobbyRay Esparza, Cultural Coordinator for the Cahuilla Band of Indians, stating the Cahuilla Band of Indians do not have knowledge of any cultural resources near or within the project area. Although this project is outside the Cahuilla reservation boundary, it is within the Cahuilla traditional land use area. Therefore, Mr. Esparza stated the Cahuilla Band of Indians have an interest in the project and would like to consult in the Section 106 process. Additionally, Mr. Esparza requests a tribal monitor be present during all ground disturbing activities. Finally, the tribe asked they be notified of all updates with the project moving forward. Mr. Esparza's request for consultation was forwarded to EMWD.

On January 28, 2020 and February 3, 2020, Rincon conducted follow-up phone calls with the Native American contacts who had not responded to the initiation letter. Ten additional responses were received as a result of the follow-up efforts. A summary of each response is provided below.

On January 28, 2020, Rebecca Mejia of the Agua Caliente Band of Cahuilla Indians noted she could not find the notification letter. She stated she would reach out to Patricia Garcia, the Director of Historic Preservation, to see if the letter was under her review. No further response was received from Ms. Mejia or Ms. Garcia.

On January 28, 2020, Kimberly Pedroza of the Agua Caliente Band of Cahuilla Indians stated she would review the notification letter herself. She requested that the letter be sent to her via email. Rincon staff emailed the letter to Ms. Pedroza on January 28, 2020. No response was received from Ms. Pedroza.

On January 28, 2020, Rincon staff discussed the project with Robert Dorame of the Gabrielino/Tongva Indians of California Tribal Council. He requested a copy of the notification letter be emailed to him. Rincon emailed the letter to Mr. Dorame on January 28, 2020. On February 3, 2020, Rincon spoke to Mr. Dorame who stated he would review the copy of the notification letter.

On February 5, 2020, Rincon received a phone call from Mr. Dorame who stated that in the event that cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, that he would like to be notified. Additionally, he noted that if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the MLD designation from the NAHC. Mr. Dorame's request was forwarded to EMWD.

On January 28, 2020, Rincon called Chairman Joseph Hamilton of the Ramona Band of Cahuilla Indians and was told to email a copy of the initiation letter to John Gomez, the Tribal Environmental Project Manager. Rincon staff emailed the letter to Mr. Gomez on January 28, 2020. No response has been received from Mr. Gomez.

On January 28, 2020, Rincon called Chairman Steven Estrada of the Santa Rosa Band of Cahuilla Indians. Mercedes Estrada in the tribal administration office stated that the tribe does not have any comments regarding the project at this time.

On January 28, 2020, Rincon called Co-Chairman Mark Cochrane of the Serrano Nation of Mission Indians. He stated that the Tribe does not have any comments regarding the project at this time.

On January 28, 2020, Rincon called and left a message for Chairman John Christman of the Viejas Band of Kumeyaay Indians. Ray Turan returned the call and stated the project is outside of the Tribe's area of cultural interest.

On January 30, 2020, Rincon received an email from Travis Armstrong, Tribal Historic Preservation Officer (THPO) for the Morongo Band of Mission Indians. Mr. Armstrong stated that the THPO acknowledges the letter sent on behalf of the project. Mr. Armstrong stated the proposed project is within a particularly sensitive area of the ancestral territory of the Cahuilla and Serrano people of the Morongo Band of Mission Indians. Mr. Armstrong noted the 0.5-mile search radius was inadequate to evaluate resource patterning and potential for buried deposits. He requested a search radius of at least 1 mile. Mr. Armstrong asked that Rincon furnish the THPO with copies of the site records for all prehistoric archaeological resources within the 1-mile radius. Additionally, Mr. Armstrong requested Rincon also provide a listing of all cultural studies or surveys previously conducted within the 1-mile radius. Mr. Armstrong's request was forwarded to EMWD.

On February 3, 2020, Rincon called and spoke with Chairwoman Donna Yocum of the San Fernando Band of Mission Indians. Chairwoman Yocum stated that the Tribe would like to defer to the local tribes regarding this project and does not have further comments.

On February 11, 2020, Rincon received an email from Arysa Gonzalez Romero, the Historic Preservation Technician for the Agua Caliente Band of Cahuilla Indians. Ms. Gonzalez Romero stated that the project area is not located within the boundaries of the Agua Caliente Band of Cahuilla Indians Reservation, however, it is within the Tribe's Traditional Use Area. The Agua Caliente Band of Cahuilla Indians requests a copy of the records search with associated reports and site records from the information center and copies of any cultural resource documentation (report and site records) generated in connection with the project.

Appendix B provides copies of all non-confidential Native American outreach correspondence, including a summary table.

4.3 Local Historic Group Consultation

Rincon contacted the Moreno Valley Historical Society, City of Moreno Valley Environmental and Historical Preservation Board, Riverside African American Historical Society, and March Field Air Museum, to request information regarding historical resources in the proposed project APE. Rincon prepared and mailed letters to each of these groups on January 15, 2020; follow-up phone calls were conducted on January 28, 2020 and February 3, 2020 (Appendix C).

Two responses were received from the historical society consultation. In a phone call on January 28, 2020, the museum receptionist for the March Field Air Museum noted they had no personnel tasked with handling Section 106 consultation. During the follow-up phone calls on February 3, 2020, Claudia Moreno, the secretary for the City of Moreno Valley Environmental and Historical Preservation Board, stated the Board had no concerns regarding historic properties in or near the project area. Appendix C provides a summary of the historical group consultation efforts.

4.4 Historical Imagery Review

An aerial photograph of the project APE shows that in 1966 much of the area is characterized by agricultural fields with sparse areas of residential development (NETRonline 2020). At that time, the runway and buildings associated with March Field are present southwest of the project APE. In addition, a southwest-northeast running natural drainage is shown between Cottonwood Avenue and Alessandro Boulevard. In later aerial images, the same drainage appears to be channelized sometime between 1978 and 1980. The aerial imagery also indicates much of the APE transitioned from agricultural land to residential, commercial, and light industrial development in the 1980s and 1990 (NETRonline 2020).

5 Field Survey

5.1 Methods

On January 20 and 21, 2020, Rincon Archaeologist Gena Granger performed a cultural resources field survey of the APE. Ms. Granger was accompanied by Talitha Arceo, a tribal representative from the Soboba Band of Luiseño Indians. Developed portions of the pipeline alignment along Cottonwood Avenue, Indian Street, Alessandro Boulevard, Sweet Grass Drive, Flaming Arrow Drive, Perris Boulevard, Kitching Street, Gentian Avenue, Santiago Avenue, Patricia Street, and Los Cabos Drive were surveyed via a windshield survey.

A pedestrian survey was conducted for the proposed well locations and treatment sites on vacant or partially developed land. All exposed ground surfaces were carefully examined by the archaeologist who walked a series of 10-meter (33 foot) spaced transects across each survey area.

Ms. Granger examined the APE for evidence of artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discolorations indicative of cultural midden deposits, soil depressions, and features indicative of the former presence of structures of buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and road cuts were also visually inspected. Field notes of survey conditions and observations were recorded using Rincon field forms and a digital camera. Copies of the original field notes and photographs are maintained at the Rincon Los Angeles office.

5.2 Results

Results of the field survey indicate large portions of the APE are developed with pavement covering much of the proposed pipeline alignment (Photograph 1). Additionally, some of Kitching Street's west easement has been treated with gravel or decomposed granite along the edge of a concrete storm drain culvert. Ground visibility within these areas was less than 5 percent.

Ground visibility varied greatly (5 to 90 percent) within the portions of the APE encompassing the proposed well and treatment site locations (Photographs 2 and 3). In these areas, the ground surfaces were obstructed by landscaping, playground equipment, homeless encampments, a retention pond, and modern refuse. An examination of areas of exposed ground indicates native sediments consist of loosely consolidated reddish tan sandy silt with small gravel inclusions. Surficial sediments throughout the APE have been extensively disturbed by road construction and maintenance activities, vegetation clearing, imported fill deposition, and rodent activity.

The field survey identified a semi-subterranean vault and a cinder block structure on Cactus Corridor Well Site 2, Option 1 and Cactus Corridor Well Site 4, Option 2/Treatment Site Option 2, respectively (Figure 2; Photographs 4 and 5). Neither structure displays characteristics to indicate they are historic in age. Subsequent review of historical aerial images of the two areas also found no evidence to indicate the structures are more than 45 years of age. No other historic-age built-environment or archaeological resources were identified within the APE. Appendix D provides a detailed summary of the pedestrian survey findings.

Photograph 1 Intersection of Alessandro Boulevard and Perris Boulevard, Facing East

Photograph 2 Cactus Corridor East Well 2, Option 1, Facing Southeast

Photograph 3 Treatment Site Option 3, Facing Northwest

Photograph 4 Vault on Cactus Corridor Well Site 2, Option 1, Facing North

Photograph 5 Cinder Block Structure on Cactus Corridor Well Site 4, Option 2/Treatment Site Option 2, Facing North

6 Findings and Recommendations

The results of the cultural resources records search, Native American and historical society consultation, historical map and imagery review, and field survey identified no cultural resources within the APE. Although the lack of surface evidence of archaeological remains does not preclude their subsurface existence, no archaeological resources have been previously recorded within or immediately adjacent to the project APE. In addition, the majority of archaeological sites documented within the record search area are prehistoric bedrock milling features which are located at the base of some low-lying hills almost 0.5 mile from the APE. These findings suggest that there is a relatively low potential for encountering substantial prehistoric archaeological remains during construction activities.

Rincon recommends a finding of ***no impact to historical and archaeological resources*** under CEQA and ***no historic properties affected*** under Section 106 of NHPA. The following recommendations are offered in the case of the unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

6.1 Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under Section 106 of the NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts.

6.2 Human Remains

If human remains are found, regulations outlined in the State of California Health and Safety Code Section 7050.5 state no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner.

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Erlandson, Jon M., Theodore Cooley, and Richard Carrico

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Heizer, Robert F.

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Holmes, Elmer Wallace.

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King, Chester D.

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Kroeber, Alfred J.

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Koerper, Henry C. and Christopher E. Drover

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McCawley, William

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Warren, Claude N.

1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. In Archaic Prehistory in the Western United States, edited by C. Irwin-Williams, pp. 1–14. Eastern New Mexico University Contributions in Anthropology No. 1. Portales.

Workman, Boyle

1935 The City that Grew. Southland Publication Co., Los Angeles.

Appendix A

Record Search Results (Confidential)

Appendix B

Native American Consultation

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

January 7, 2020

Tiffany Clark
Rincon Consultants, Inc.

Via Email to: tclark@rinconconsultants.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Cactus Avenue Corridor Project, Riverside County

Dear Ms. Clark:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated

within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was <u>negative</u>.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Riverside County
1/7/2020

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Augustine Band of Cahuilla Mission Indians
Amanda Vance, Chairperson
P.O. Box 846 — Cahuilla
Coachella, CA, 92236
Phone: (760) 398 - 4722
Fax: (760) 369-7161
hhaines@augustinetribe.com

Cabazon Band of Mission Indians
Doug Welmas, Chairperson
84-245 Indio Springs Parkway — Cahuilla
Indio, CA, 92203
Phone: (760) 342 - 2593
Fax: (760) 347-7880
jstapp@cabazonindians-nsn.gov

Cahuilla Band of Indians
Daniel Salgado, Chairperson
52701 U.S. Highway 371 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 5549
Fax: (951) 763-2808
Chairman@cahuilla.net

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

This list is current only as of the date of this document. 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 Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Cactus Avenue Corridor Project, Riverside County.

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Jamul Indian Village
Lisa Cumper, Tribal Historic Preservation Officer
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4855
lcumper@jiv-nsn.gov

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

Los Coyotes Band of Cahuilla and Cupeño Indians
Shane Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 — Diegueno
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramona-nsn.gov

This list is current only as of the date of this document. 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 Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Cactus Avenue Corridor Project, Riverside County.

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Vanyume
Phone: (503) 539 - 0933 — Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

San Pasqual Band of Diegueno Mission Indians
Allen Lawson, Chairperson
P.O. Box 365 — Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

Santa Rosa Band of Cahuilla Indians
Steven Estrada, Chairperson
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
mflaxbeard@santarosacahuilla-nsn.gov

Serrano Nation of Mission Indians
Mark Cochrane, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9032
serranonation1@gmail.com

Serrano Nation of Mission Indians
Wayne Walker, Co-Chairperson
P. O. Box 343 — Serrano
Patton, CA, 92369
Phone: (253) 370 - 0167
serranonation1@gmail.com

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92583 — Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Thomas Tortez, Chairperson
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
tmchair@torresmartinez.org

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337

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This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Cactus Avenue Corridor Project, Riverside County.

19-08223 Cactus Avenue Corridor Project Section 106 Correspondence Tracking

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Agua Caliente Band of Cahuilla Indians **Jeff Grubbe, Chairperson** 5401 Dinah Shore Drive Palm Springs, CA, 92264 Phone: (760) 699 - 6800 Fax: (760) 699-6919	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Spoke with Rebecca Mejia who looked for the notification letter and couldn't find. Was going to reach out to Patricia Garcia, the Director of Historic Preservation to see if the letter was under her review. 2/3/2020: Called Patricia Garcia and left voicemail and contact info 2/11/2020: Rincon received an email from Arysa Gonzalez Romero, the Historic Preservation Technician for the Agua Caliente Band of Cahuilla Indians. Ms. Gonzalez Romero stated that the project area is not located within the boundaries of the Agua Caliente Band of Cahuilla Indians Reservation, however, it is within the Tribe's Traditional Use Area. The Agua Caliente Band of Cahuilla Indians requests a copy of the records search with associated reports and site records from the information center and copies of any cultural resource documentation (report and site records) generated in connection with the project.
Augustine Band of Cahuilla Mission Indians **Amanda Vance, Chairperson** P.O. Box 846 Coachella, CA, 92236 Phone: (760) 398 - 4722 Fax: (760) 369-7161 hhaines@augustinetribe.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Spoke with Kimberly Pedroza and she stated that Chairperson Amanda Vance does not work out of the office that the number is for but that she would review the notification letter herself if it is sent to her via email. Email sent to Kimberly kpedroza@augustinetribe.com on 1/28 2/3/2020: Called for Kimberley Pedroza and she was not in the office; left a message and contact info with reception
Cabazon Band of Mission Indians **Doug Welmas, Chairperson** 84-245 Indio Springs Parkway Indio, CA, 92203 Phone: (760) 342 - 2593 Fax: (760) 347-7880 jstapp@cabazonindians-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Directed to Jackie Barnum. Left message and contact number 2/3/2020: Called and unable to be directed to Jackie Barnum or find in directory to leave a voicemail. No answer at admin offices either.

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Cahuilla Band of Indians **Daniel Salgado, Chairperson** 52701 U.S. Highway 371 Anza, CA, 92539 Phone: (951) 763 - 5549 Fax: (951) 763-2808 Chairman@cahuilla.net	1/15/2020	1/28/2020		On January 28, 2020, Rincon received a letter from BobbyRay Esparza, Cultural Coordinator for the Cahuilla Band of Indians, stating the Cahuilla Band of Indians do not have knowledge of any cultural resources near or within the project area and although this project is outside the Cahuilla reservation boundary, it is within the Cahuilla traditional land use area. Therefore, the Cahuilla Band of Indians do have an interest in this project and would like to consult in the Section 106 process. Additionally, Mr. Esparza requests that a tribal monitor be present during all ground disturbing activities and to be notified of all updates with the project moving forward.
Campo Band of Diegueno Mission Indians **Ralph Goff, Chairperson** 36190 Church Road, Suite 1 Campo, CA, 91906 Phone: (619) 478 - 9046 Fax: (619) 478-5818 rgoff@campo-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Ralph Goff retired a year ago…was redirected to Harry Quero the new Chairperson. Left message and contact info. 2/3/2020: Directory for Harry Quero still leads you to Mr. Goff's voicemail. Left a voicemail with contact info for Mr. Quero assuming this voicemail is set up to direct messages to current Chairman Quero.
Ewiiaapaayp Band of Kumeyaay Indians **Michael Garcia, Vice Chairperson** 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 michaelg@leaningrock.net	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info
Ewiiaapaayp Band of Kumeyaay Indians **Robert Pinto, Chairperson** 4054 Willows Road Alpine, CA, 91901 Phone: (619) 445 - 6315 Fax: (619) 445-9126 wmicklin@leaningrock.net	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Gabrieleno Band of Mission Indians – Kizh Nation **Andrew Salas, Chairperson** P.O. Box 393 Covina, CA, 91723 Phone: (626) 926 – 4131 admin@gabrielenoindians.org	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and voicemail box is full and will not allow to leave a message 2/3/2020: Called and left a voicemail and contact info
Gabrieleno/Tongva San Gabriel Band of Mission Indians **Anthony Morales, Chairperson** P.O. Box 693 San Gabriel, CA, 91778 Phone: (626) 483 - 3564 Fax: (626) 286-1262 GTTribalcouncil@aol.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info
Gabrielino /Tongva Nation **Sandonne Goad, Chairperson** 106 1/2 Judge John Aiso St., #231 Los Angeles, CA, 90012 Phone: (951) 807 - 0479 sgoad@gabrielino-tongva.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Gabrielino Tongva Indians of California Tribal Council **Robert Dorame, Chairperson** P.O. Box 490 Bellflower, CA, 90707 Phone: (562) 761 - 6417 Fax: (562) 761-6417 gtongva@gmail.com	1/15/2020	1/28/2020		1/28/2020: Called and spoke with Mr. Dorame. He asked to be emailed a copy of the notification letter that was mailed. Email sent to gtongva@gmail.com 2/3/2020: Called and spoke with Mr. Dorame. He will call back later this afternoon after he reviews the email sent last week 1/28 2/5/2020: Mr. Dorame called and stated that in the event that cultural resources and/or artifacts pertaining to the Tongva people are impacted or unearthed, the Gabrielino Tongva Indians of California Tribal Council would like to be notified. Additionally, Mr. Dorame stated that if human remains are unearthed and identified by the Coroner as indigenous people, the Gabrielino Tongva Indians of California Tribal Council would like to be contacted regardless of the MLD designation from the NAHC.
Gabrielino-Tongva Tribe **Charles Alvarez,** 23454 Vanowen Street West Hills, CA, 91307 Phone: (310) 403 – 6048 roadkingcharles@aol.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info
Jamul Indian Village **Lisa Cumper, Tribal Historic Preservation Officer** P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4855 lcumper@jiv-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left a voicemail and contact info

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Jamul Indian Village **Erica Pinto, Chairperson** P.O. Box 612 Jamul, CA, 91935 Phone: (619) 669 - 4785 Fax: (619) 669-4817 epinto@jiv-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and voicemail box is full and will not allow to leave a message 2/3/2020: Called and voicemail box is full and will not allow to leave a message
La Posta Band of Diegueno Mission Indians **Gwendolyn Parada, Chairperson** 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 LP13boots@aol.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left message with contact info with reception
La Posta Band of Diegueno Mission Indians **Javaughn Miller, Tribal Administrator** 8 Crestwood Road Boulevard, CA, 91905 Phone: (619) 478 - 2113 Fax: (619) 478-2125 jmiller@LPtribe.net	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left message with contact info with reception; was notified that Ms. Miller is no longer the Tribal Administrator and that James Hill is. Asked to give message to Mr. Hill
Los Coyotes Band of Cahuilla and Cupeño Indians **Shane Chapparosa, Chairperson** P.O. Box 189 Warner Springs, CA, 92086-0189 Phone: (760) 782 - 0711 Fax: (760) 782-0712	1/15/2020			On January 23, 2020, Rincon received an email from Dorothy Willis, of the Los Coyotes Band of Indians Environmental Department, stating that the tribal group had received the notice of the proposed project and that it is currently being reviewed. Additionally, Ms. Willis noted that Mr. Ray Chapparosa is the current Chairman and not Shane Chapparosa.

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Manzanita Band of Kumeyaay Nation **Angela Elliott Santos, Chairperson** P.O. Box 1302 Boulevard, CA, 91905 Phone: (619) 766 - 4930 Fax: (619) 766-4957	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left message with contact info with reception
Mesa Grande Band of Diegueno Mission Indians **Michael Linton, Chairperson** P.O Box 270 Santa Ysabel, CA, 92070 Phone: (760) 782 - 3818 Fax: (760) 782-9092 mesagrandeband@msn.com	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left message with contact info with reception

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Morongo Band of Mission Indians **Robert Martin, Chairperson** 12700 Pumarra Rroad Banning, CA, 92220 Phone: (951) 849 – 8807 Fax: (951) 922-8146 dtorres@morongo-nsn.gov	1/15/2020	1/28/2020		1/28/2020: Robert Martin has been retired for years was redirected to Jerry Begone; Mr. Begone did not answer, left a message and contact info On January 30, 2020, Rincon received an email from Travis Armstrong, Tribal Historic Preservation Officer to the Morongo Band of Mission Indians. Mr. Armstrong stated that the Tribal Historic Preservation Office of the Morongo Band of Mission Indians acknowledges the letter sent on behalf of the project. The Tribe appreciates the efforts to safeguard tribal cultural resources through decisions informed by tradition, custom and knowledge of federally recognized tribal governments that are the subject-matter experts involving the significance and integrity of these resources. Mr. Armstrong further states that the proposed project is within a particularly sensitive area of the ancestral territory of the Cahuilla and Serrano people of the Morongo Band of Mission Indians. Mr. Armstrong also comments that the 0.5-mile search radius noted in the January 15, 2020 letter is inadequate to evaluate resource patterning and potential for buried deposits. Mr. Armstrong requests that Rincon perform a search radius of at least 1 mile. Mr. Armstrong asks that Rincon furnish their office with copies of the site records for all prehistoric resources within the 0.5-mile radius, and within the 1-mile radius when that record search is completed. Additionally, Mr. Armstrong requests Rincon also provide a listing of all cultural studies or surveys previously conducted within the 1-mile radius.
Pechanga Band of Luiseno Indians **Mark Macarro, Chairperson** P.O. Box 1477 Temecula, CA, 92593 Phone: (951) 770 - 6000 Fax: (951) 695-1778 epreston@pechanga-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info with Kimmie Vazquez at Tribal Office front desk 2/3/2020: Called and left voicemail with contact info with Chairman's assistant, Emily Preston.

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Ramona Band of Cahuilla **Joseph Hamilton, Chairperson** P.O. Box 391670 Anza, CA, 92539 Phone: (951) 763 - 4105 Fax: (951) 763-4325 admin@ramona-nsn.gov	1/15/2020	1/28/2020		1/28/2020: Called and was directed by Michelle Gutierrez to email John Gomez, the Environmental Project Manager a copy of the project notification letter. Email sent to jgomez@ramona-nsn.gov 2/3/2020: Called and left message with contact info with reception
San Fernando Band of Mission Indians **Donna Yocum, Chairperson** P.O. Box 221838 Newhall, CA, 91322 Phone: (503) 539 - 0933 Fax: (503) 574-3308 ddyocum@comcast.net	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and spoke with Chairwoman Yocum and she prefers to defer to the local tribes for this project.
San Manuel Band of Mission Indians **Lee Clauss, Director of Cultural Resources** 26569 Community Center Drive Highland, CA, 92346 Phone: (909) 864 - 8933 Fax: (909) 864-3370 lclauss@sanmanuel-nsn.gov	1/15/2020			On January 17, 2020, Rincon received an email from Alexandra McCleary, Tribal Archaeologist for the San Manuel Band of Mission Indians (SBMI), stating that the proposed project is located outside of the Serrano ancestral territory and, as such, SBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to legal and regulatory mandates.
San Pasqual Band of Diegueno Mission Indians **Allen Lawson, Chairperson** P.O. Box 365 Valley Center, CA, 92082 Phone: (760) 749 - 3200 Fax: (760) 749-3876 allenl@sanpasqualtribe.org	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and Allen Lawson is no longer Chairperson as of 1/2020, new Chairperson is Steve Cope. His contact info is 760-651-5178, email: stevenc@sanpasqualtribe.org Called Chairperson Steve Cope and voicemail box will not allow to leave a message 2/3/2020: Called and left a voicemail with contact info for Chairman Cope

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Santa Rosa Band of Cahuilla Indians **Steven Estrada, Chairperson** P.O. Box 391820 Anza, CA, 92539 Phone: (951) 659 - 2700 Fax: (951) 659-2228 mflaxbeard@santarosacahuillansn.gov	1/15/2020	1/28/2020		1/28/2020: Reached the Tribal Office and Mercedes Estrada stated that the Tribe does not have any comments regarding the project at this time.
Serrano Nation of Mission Indians **Mark Cochrane, Co-Chairperson** P. O. Box 343 Patton, CA, 92369 Phone: (909) 528 – 9032 serranonation1@gmail.com	1/15/2020	1/28/2020		1/28/2020: Reached Chairperson Mark Cochrane and he stated the Tribe does not have any comments regarding the project at this time.
Serrano Nation of Mission Indians **Wayne Walker, Co-Chairperson** P. O. Box 343 Patton, CA, 92369 Phone: (253) 370 – 0167 serranonation1@gmail.com	1/15/2020	1/28/2020		1/28/2020: Called and left message and contact info; also mentioned that Mr. Cochrane had made the statement that the Tribe did not have any comments regarding the project at this time/
Soboba Band of Luiseno Indians **Scott Cozart, Chairperson** P. O. Box 487 San Jacinto, CA, 92583 Phone: (951) 654 - 2765 Fax: (951) 654-4198 jontiveros@soboba-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left voicemail with contact info with Chairman's assistant

Contact List Received from NAHC on 1/7/2020	Date Letter Sent to contact	Date of Phone Contact Round 1	Date of Phone Contact Round 2	Comments/Concerns
Sycuan Band of the Kumeyaay Nation **Cody Martinez, Chairperson** 1 Kwaaypaay Court El Cajon, CA, 92019 Phone: (619) 445 - 2613 Fax: (619) 445-1927 ssilva@sycuan-nsn.gov	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left voicemail and contact info
Torres-Martinez Desert Cahuilla Indians **Thomas Tortez, Chairperson** P.O. Box 1160 Thermal, CA, 92274 Phone: (760) 397 - 0300 Fax: (760) 397-8146 tmchair@torresmartinez.org	1/15/2020	1/28/2020	2/3/2020	1/28/2020: Called and left message and contact info 2/3/2020: Called and left voicemail and contact info
Viejas Band of Kumeyaay Indians **John Christman, Chairperson** 1 Viejas Grade Road Alpine, CA, 91901 Phone: (619) 445 - 3810 Fax: (619) 445-5337	1/15/2020	1/28/2020		1/28/2020: Called and left message and contact info. Ray Turan (619-659-2312) called back and commented that the Project is outside of the Tribe's area of cultural interest

Example Letter

Rincon Consultants, Inc.

3600 Lime Street, Suite 226
Riverside, California 92501

951 782 0061 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

January 15, 2020

Charles Alvarez
Gabrielino-Tongva Tribe
23454 Vanowen Street
West Hills, CA, 91307
Phone: (310) 403 – 6048
roadkingcharles@aol.com

Subject: Cultural Resources Assessment for Eastern Municipal Water District Cactus Avenue Corridor Project, City of Moreno Valley, Riverside County, California

Dear Mr. Alvarez,

Rincon Consultants, Inc. has been retained to conduct a cultural resources assessment for the Eastern Municipal Water District's (EMWD) Cactus Avenue Corridor Project (project). The proposed project consists of the development and operation of groundwater extraction, treatment, and distribution facilities within the EMWD's Perris North Groundwater Management Zone in the city of Moreno Valley, Riverside County, California. Maps showing the location of the project site are included.

The purpose of this letter is to inquire about your knowledge of potential cultural resources within the vicinity that may be impacted by project development. Rincon contacted the Native American Heritage Commission to request a Sacred Lands File (SLF) search of the project area that was returned with negative results. A records search performed of the California Historical Resources Information System identified a total of 16 prehistoric and historic-period cultural resources within a 0.5-mile radius. None of the known resources are located within the project's Area of Potential Effect (APE). Although no known archaeological resources have been recorded within the APE, we are aware that the results of the record search are not exhaustive and that additional cultural resources may exist within the area.

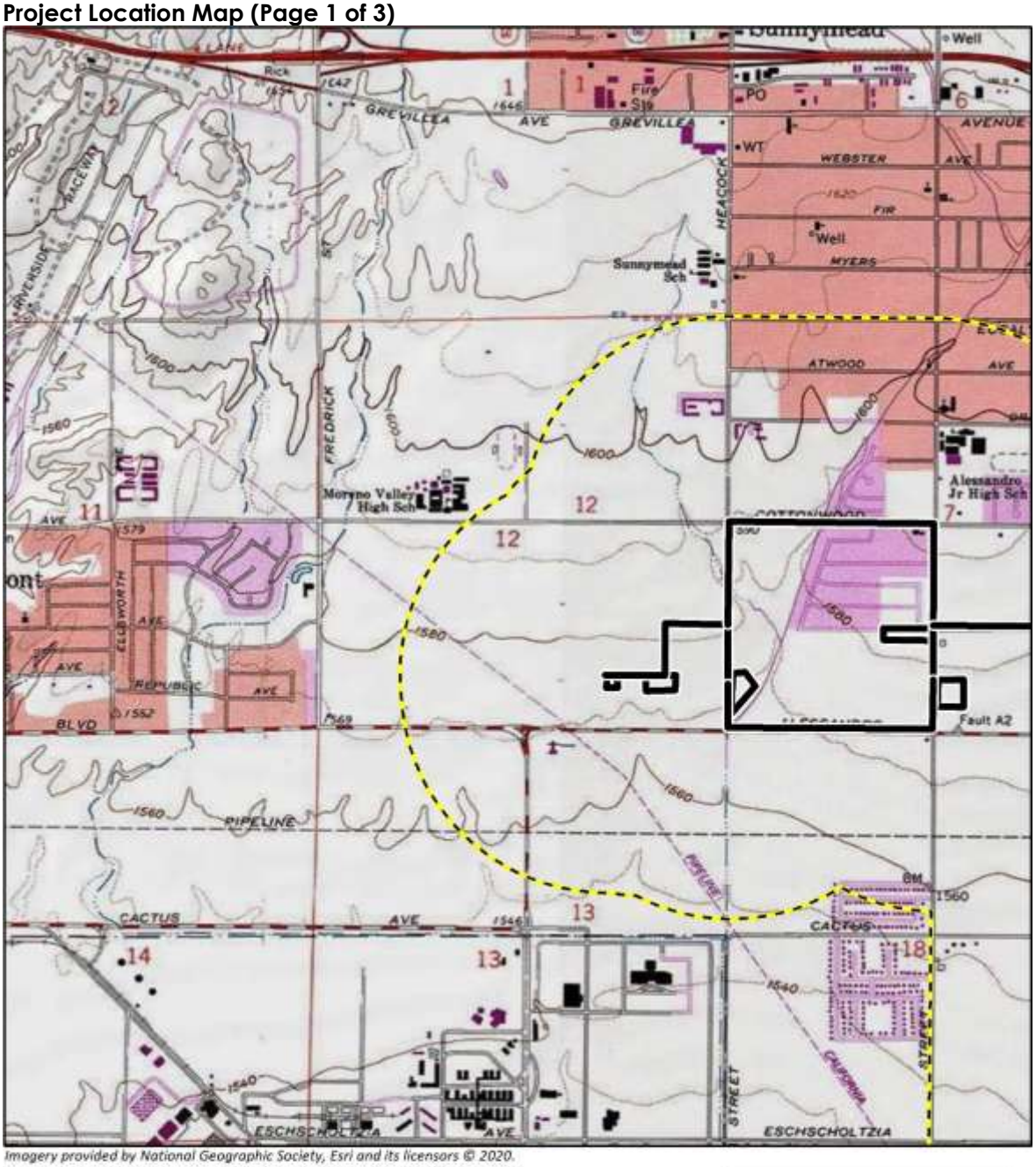
This project may involve federal funding; thus, the cultural resources study is being prepared in conformance with Section 106 of the National Historic Preservation Act (NHPA). Rincon is assisting in the Section 106 consultation effort and we are writing to provide you with an opportunity to be involved in the Section 106 consultation process. If you or your organization has any knowledge or specific concerns regarding cultural resources in the project area, please respond by telephone at (213) 788-4842 extension 149, or by email at tclark@rinconconsultants.com. Please respond within 30 days of receipt of this letter if you are interested in consultation.

Sincerely,
Rincon Consultants, Inc.

Tiffany Clark, PhD, RPA
Senior Archaeologist

Attached: Project Location Maps

Project Location Map (Page 1 of 3)



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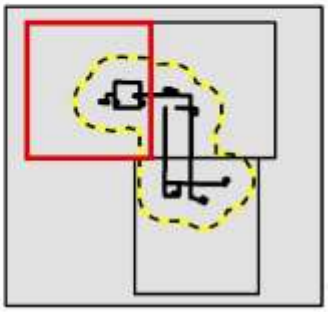
Half-Mile Buffer

Area of Potential Effects

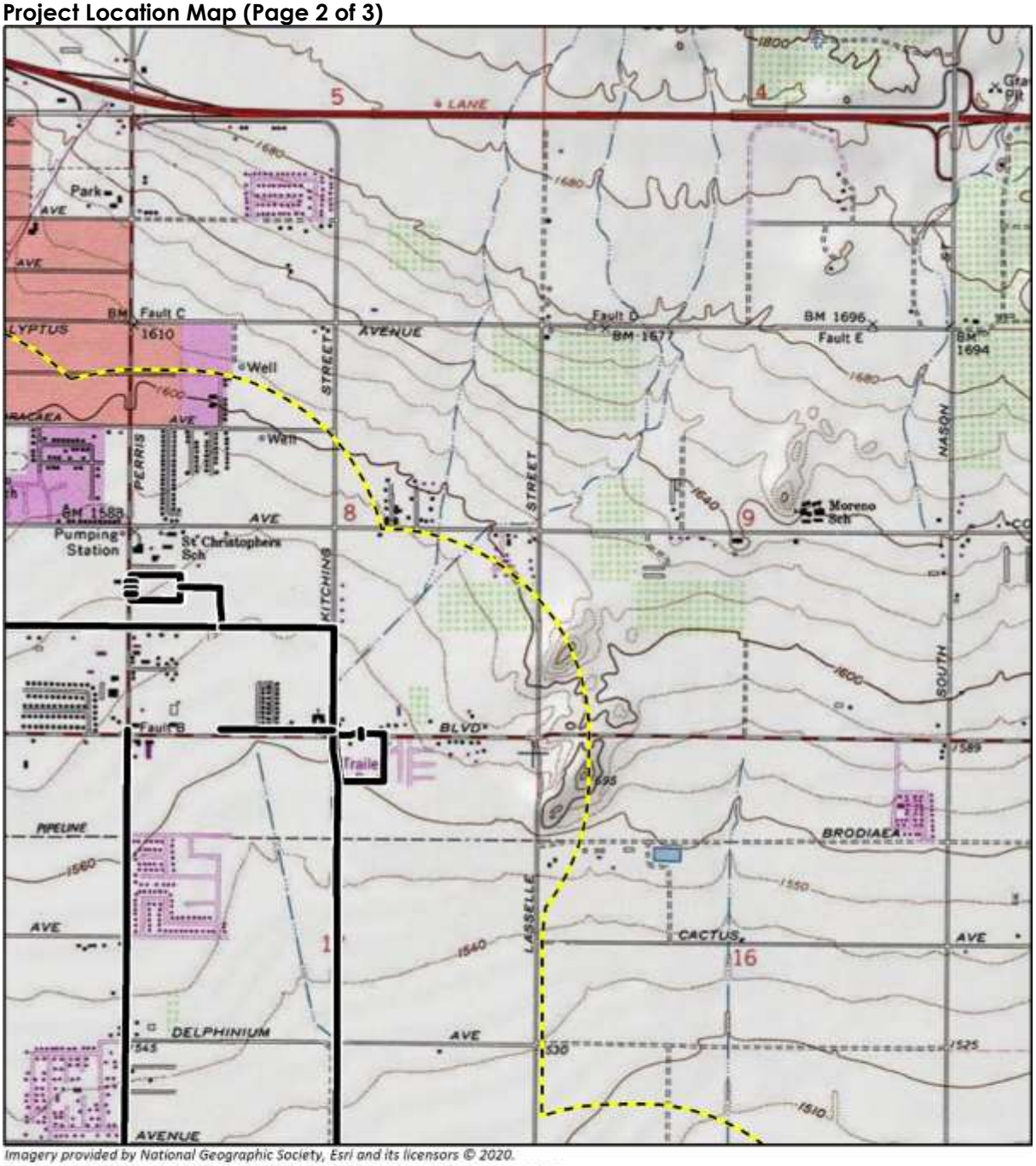
0 1,000 2,000 Feet

0 250 500 Meters

N



Project Location Map (Page 2 of 3)



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Half-Mile Buffer

Area of Potential Effects

0 1,000 2,000 Feet

0 250 500 Meters

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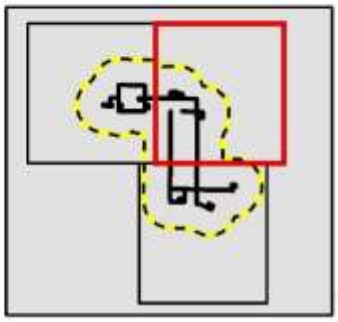
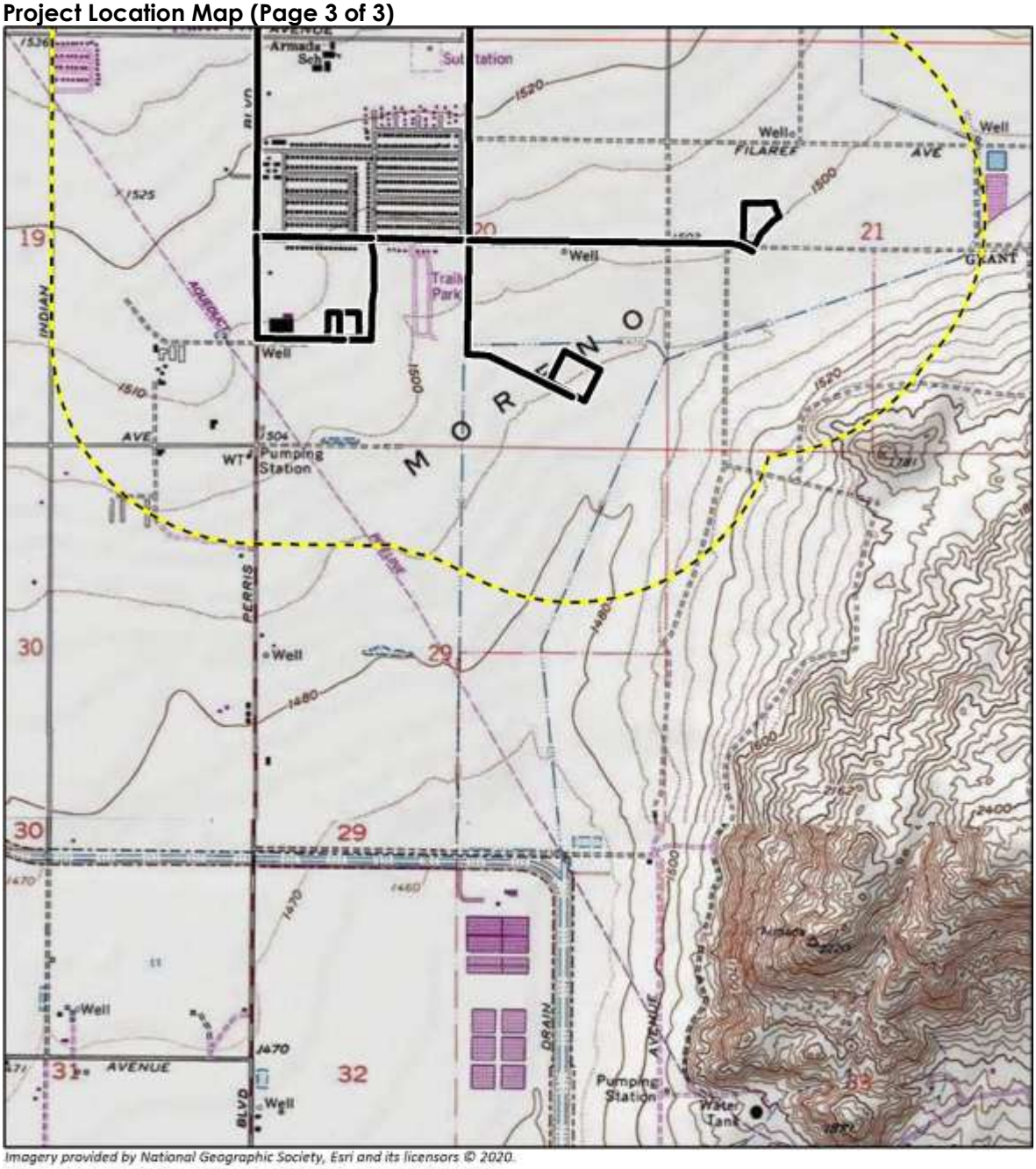


Project Location Map (Page 3 of 3)



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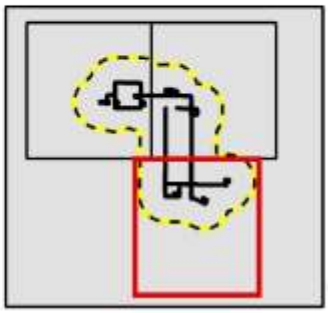
Half-Mile Buffer

Area of Potential Effects

0 1,000 2,000 Feet

0 250 500 Meters

N



Cahuilla Band of Indians
Cultural Department
52701 CA-Highway 371 Anza, California 92539

January 27, 2020

Tiffany Clark, phD, RPA
Senior Archaeologist
Rincon Consultants, INC.
3600 Lime Street, Suite 226
Riverside, CA 92501

RE: Cultural Resources Assessment for Eastern Municipal Water District Cactus Avenue Corrido Project, City of Moreno Valley, Riverside County, CA

Dear Ms. Clark,

The Cahuilla Band of Indians has received your letter regarding the above project located in the City of Moreno Valley, Riverside County, Ca. We do not have knowledge of any cultural resources near or within the project area. Although this project is outside the Cahuilla reservation boundary, it is within the Cahuilla traditional land use area. Therefore, we do have an interest in this project and would like to consult in the section 106 process. We request that a tribal monitor be present during all ground disturbing activities and to be notified of all updates with the project moving forward. The Cahuilla Band appreciates your assistance in preserving Tribal Cultural Resources in your project.

Sincerely,

BobbyRay Esparza
Cultural Coordinator
Cahuilla Band of Indians

Phone (951) 763-5549 Fax (951) 763-2808
Email: besparza@cahuilla.net

Tiffany Clark

From: Dorothy Willis <dwillisloscoyotesepa@gmail.com>
Sent: Thursday, January 23, 2020 11:08 AM
To: Tiffany Clark
Subject: Notification: Corridor Project, Moreno Valley, Riverside County

Follow Up Flag: Follow up
Flag Status: Flagged

Good Day,
We have received a notice from your office, that is currently being reviewed, please be advised that Mr. Ray Chapparosa is the current Chairman.

Thank you in advance for your time,
Dorothy Willis

Los Coyotes Band of Indians
Environmental Department

760-782-0712

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

03-058-2019-003

February 11, 2020

[VIA EMAIL TO:tclark@rinconconsultants.com]
Rincon Consultants, Inc.
Ms. Tiffany Clark
250 East 1st Street, Suite 201
Los Angeles, CA 90012

Re: Cultural resources Assessment for Eastern Municipal Water District Cactus Avenue Corridor Project

Dear Ms. Tiffany Clark,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Cactus Avenue Corridor Groundwater Wells project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*A copy of the records search with associated survey reports and site records from the information center.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760)883-1327. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Arysa Gonzalez Romero
Historic Preservation Technician
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

Appendix C

Historical Group Consultation

Historic Groups Consulted

Local Group/Government Contact	Rincon Coordination Efforts	Response to Coordination Efforts
Moreno Valley Historical Society P.O. Box 66 Moreno Valley, CA 92556 morenovalleyhistoricalsociety@gmail.com	January 15, 2020: Consultation letter mailed via USPS. January 28, 2020: followed up via email (no phone number available) and am awaiting a response. February 3, 2020: followed up via email (no phone number available) and am awaiting a response.	
Riverside African American Historical Society P.O. Box 209 Riverside, CA 92502 Phone: (951) 384-1866 Website: https://raahsinc.org/about/civil-rights-institute/	January 15, 2020: Consultation letter mailed via USPS. January 28, 2020: left voicemail on general telephone line. February 3, 2020: left voicemail on general telephone line.	
City of Moreno Valley Environmental and Historical Preservation Board **c/o Claudia Manrique** Moreno Valley Community Development Department 14177 Frederick Street Moreno Valley, CA 92553 Main line: (951)413-3206	January 15, 2020: Consultation letter mailed via USPS. January 28, 2020: Left voicemail for Claudia Enrique. February 3, 2020: Spoke with Claudia Moreno, EHPB secretary, who said the board had no concerns re: historic properties in or near the project area.	

Local Group/Government Contact	Rincon Coordination Efforts	Response to Coordination Efforts
March Field Air Museum 22550 Van Buren Boulevard Riverside, CA 92518 Main line: (951) 902-5949	January 15, 2020: Consultation letter mailed via USPS. January 28, 2020: Was informed by front desk receptionist that the museum had no personnel tasked with handling Section 106 consultation. February 3, 2020: No follow-up call was made since the organization issued a negative response during Rincon's January 28 call.	

EXAMPLE LETTER

Rincon Consultants, Inc.

3600 Lime Street, Suite 226
Riverside, California 92501

951 782 0061 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

January 8, 2020

City of Moreno Valley Environmental and Historical Preservation Board
c/o Claudia Manrique
Moreno Valley Community Development Department
14177 Frederick Street
Moreno Valley, CA 92553
(951)413-3206

Subject: Cultural Resources Assessment for Eastern Municipal Water District Cactus Avenue Corridor Project, City of Moreno Valley, Riverside County, California

Ms. Manrique,

Rincon Consultants, Inc. has been retained to conduct a cultural resources assessment for the Eastern Municipal Water District's (EMWD) Cactus Avenue Corridor Project (project). The proposed project consists of the development and operation of groundwater extraction, treatment, and distribution facilities within the EMWD's Perris North Groundwater Management Zone in the city of Moreno Valley, Riverside County, California. Maps showing the location of the project site are included.

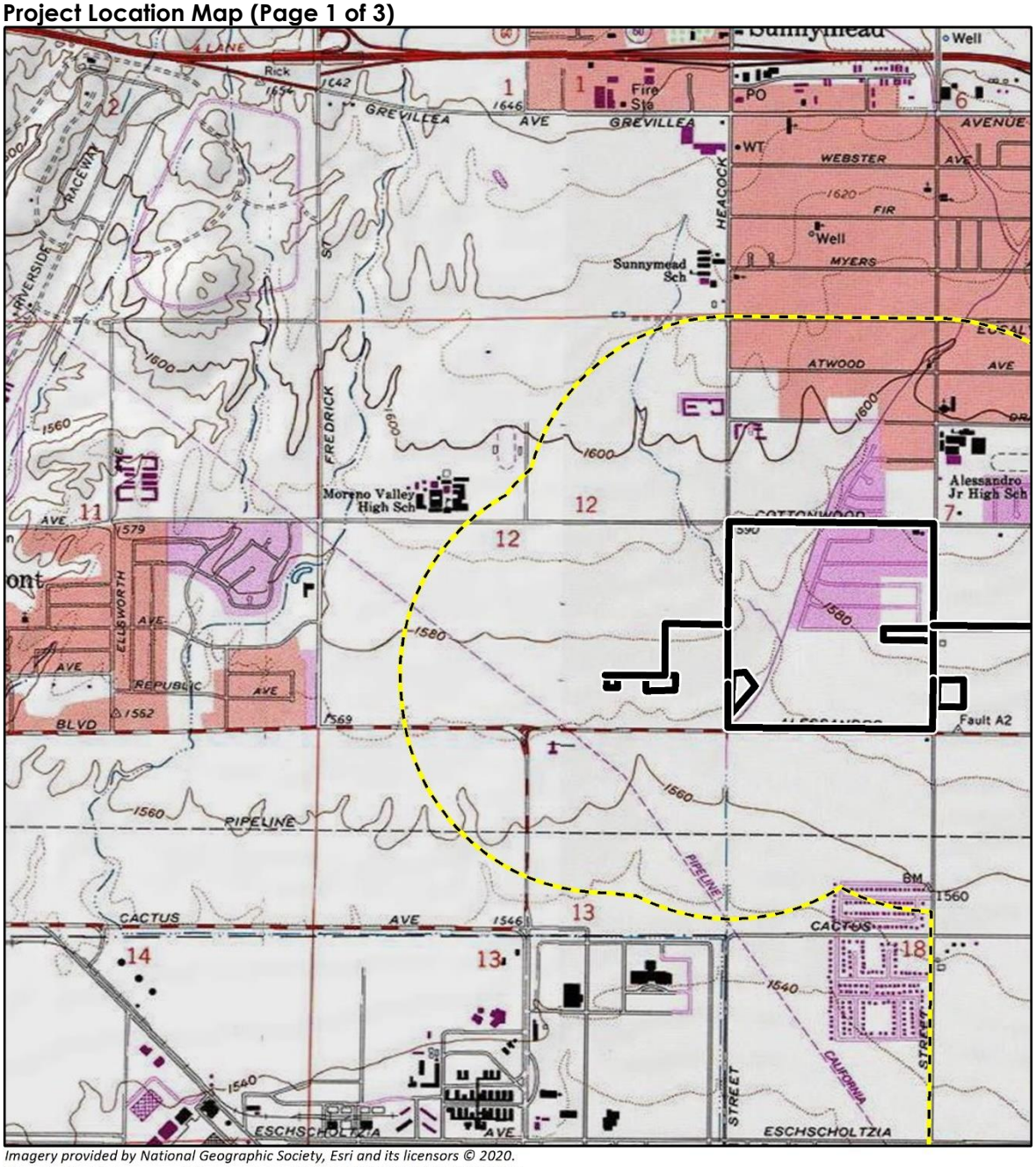
The purpose of this letter is to inquire about your knowledge of potential historic-period resources within the vicinity that may be impacted by Project development. This Project may involve federal funding; thus, this cultural resources study is being prepared in conformance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act (NHPA). Rincon is assisting the EMWD with their Section 106 consultation effort, and we are writing to provide you with an opportunity to be involved in the Section 106 consultation process. If you or your organization has any knowledge or specific concerns regarding historic-period resources in the Project area, please respond by telephone at (213) 788-4842 extension 194, or by email at tclarkl@rinconconsultants.com. Please respond within 30 days of receipt of this letter if you are interested in consultation. Thank you for your assistance.

Sincerely,
Rincon Consultants, Inc.

Tiffany Clark, PhD, RPA
Senior Archaeologist

Attached: Project Location Maps

Project Location Map (Page 1 of 3)



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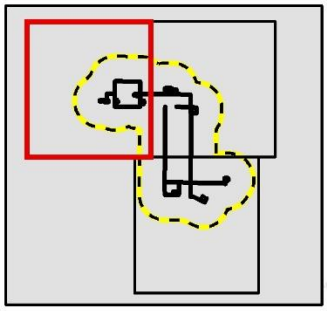
Half-Mile Buffer

Area of Potential Effects

0 1,000 2,000 Feet

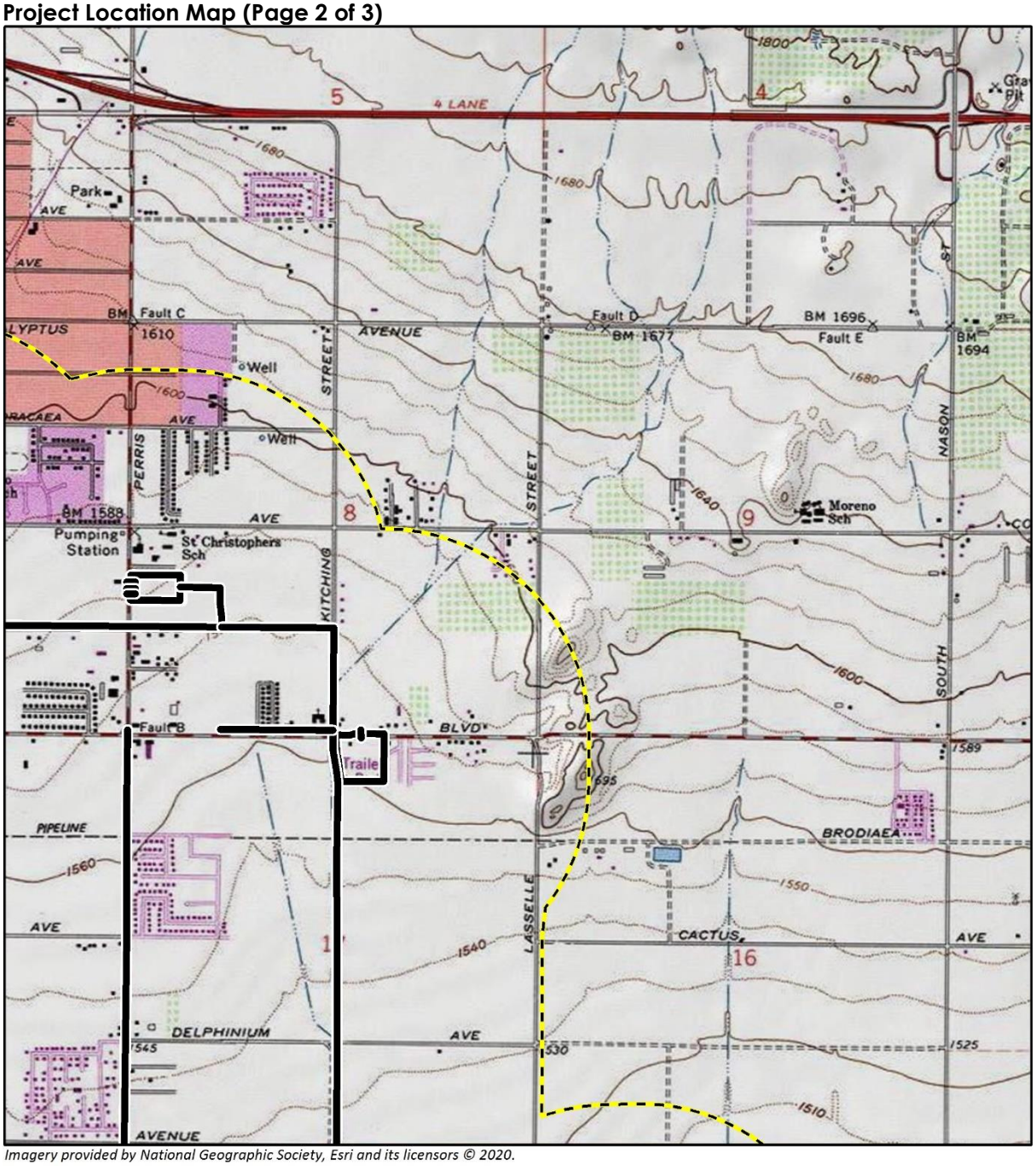
0 250 500 Meters

N



CRFig X Project Locations Topo Map

Project Location Map (Page 2 of 3)



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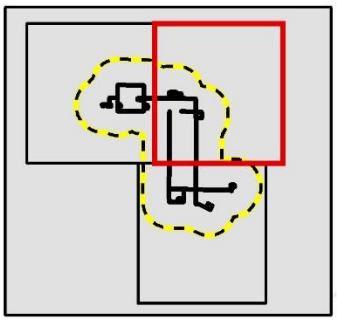
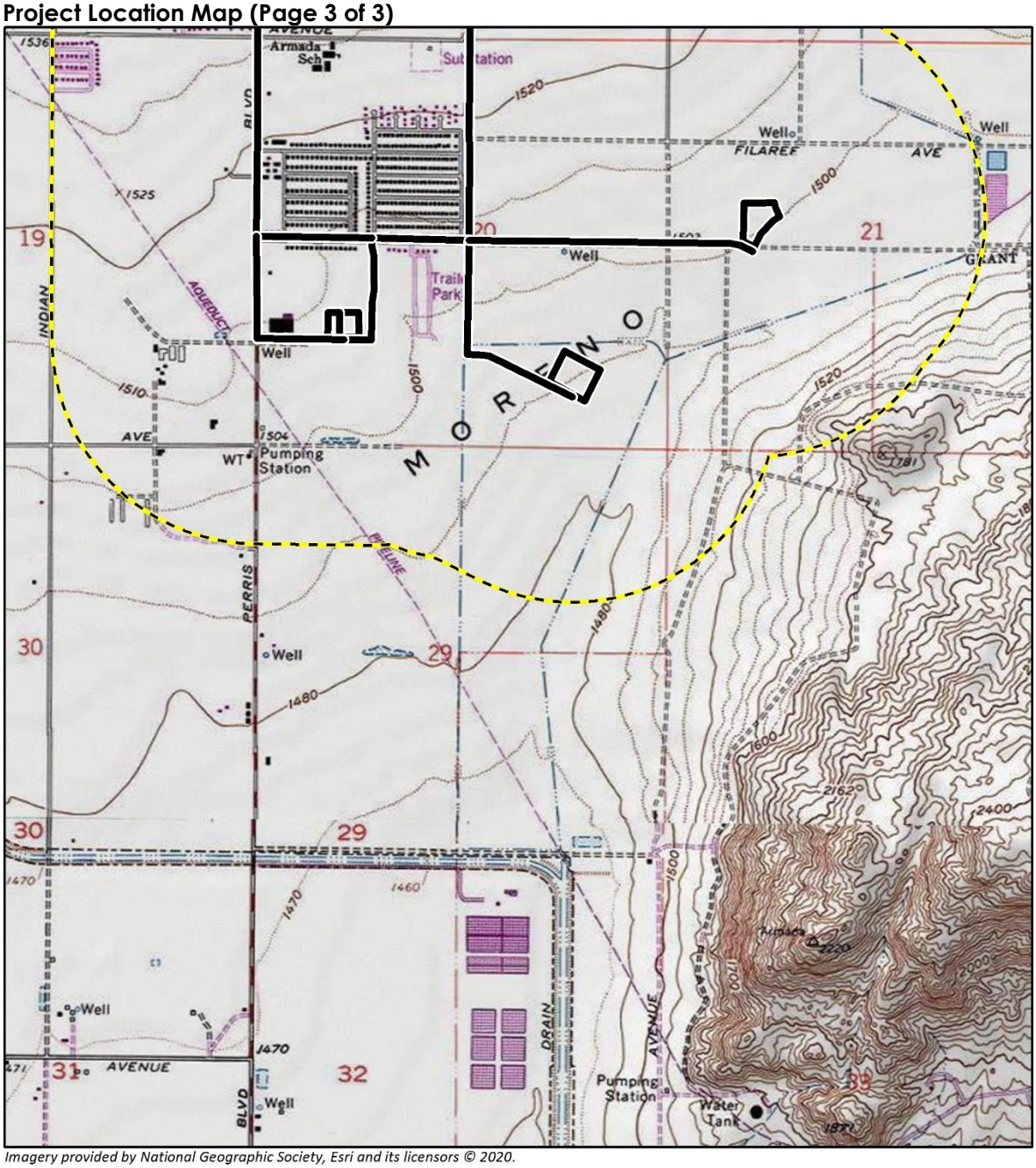


CRFig X Project Locations Topo Map

Project Location Map (Page 3 of 3)



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0 250 500 Meters

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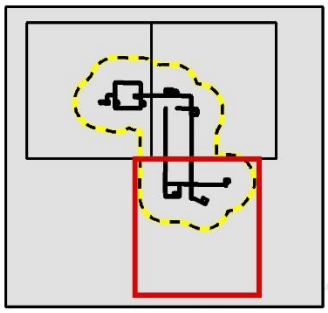

CRFig X Project Locations Topo Map

Appendix D

Survey Notes

Survey Observations for Proposed Well Sites and Treatment Facility Locations

Location Name	Description
Cactus Corridor Well 1, Option 1	Open undeveloped lot; mostly flat with small mound of soil accumulated in north/northwest portion of the site. Soil appears to be reddish tan sandy silts, heavily disturbed with asphalt and concrete fragments dumped on site. A sewer manhole is present and modern refuse scattered throughout. Grasses present 3-6" tall and ground visibility is ~10%
Cactus Corridor Well 1, Option 2	Open undeveloped lot, mostly flat and appears to have been tilled/disked. Modern refuse and homeless encampment present. Grasses are 3-6" tall and ground visibility is ~10%. Multiple fragments of cinderblock are placed through out the lot with a cross constructed in the middle of the lot with two solar lights facing up at the cross. It is likely that the cinderblocks and cross have been placed there by the homeless living in the area. Additionally, rip-rap is present in the north end of the site leading into the concrete curbed drainage and Edison facilities are present in the south end of the site.
Cactus Corridor Well 2, Option 1	Open undeveloped lot, uneven with drainage in the south end and potential vault in the middle of the lot. The vault is metal measuring 5.5ft L x 3.5ft W x 3ft D and has "GTE" welded onto the door and "PB 1092" painted on the interior wall. Vault is modern and not significant after checking historic maps and aerials. Grasses are 3-12" tall and ground visibility is ~30%. Modern refuse and krotovina are present and the lot appears to have been used to dump concrete and asphalt rubble in the middle of the parcel. Soils are more sandy silt and reddish tan in color.
Cactus Corridor Well 3, Option 1	Open undeveloped lot with grasses 3-12" tall. Ground visibility is ~30% and modern refuse including saw-cut bone and krotovina are present. The lot appears to have been tilled/disked and homeless encampments are present in the east side of the parcel. It appears that two areas along the east edge of the lot measuring ~8ft x 6ft have been excavated by the homeless in the area and depth is unknown as it is possible the homeless have created two pits and covered it with debris to hide down inside.
Cactus Corridor Well 3, Option 3	Currently Bayside Park. Developed with manicured lawn and concrete pads for playground/park facilities (west side of property). Ground visibility is less than 5% and the soil appears to be dark brown fill.
Cactus Corridor Well 4, Option 1/ Treatment Site, Option 1	Gated undeveloped lot. Grasses 3-12" tall, modern refuse, and krotovina present. Ground visibility ~10%. Silty sandy soils, disturbed from possible tilling/disking activities.
Cactus Corridor East Well 2, Option 1	Currently Victoriano Park. Developed with manicured lawn and concrete pads for playground/park facilities (eastside of property). Ground visibility is less than 5% and the soil appears to be dark brown fill.
Cactus Corridor East Well 2, Option 2	Currently Parque Amistad. Developed with manicured lawn and concrete pads for playground/park facilities (northern end of property). Ground visibility is less than 5% and the soil appears to be dark brown fill.
Santiago Well Site	Current use as a yard for City of Moreno Valley; locked facility. Uneven ground surface at site; retention pond for drainage present in east and southeast corner of site. Soils are reddish/tan silty sands with modern refuse present. Ground visibility 75-80%.
Cactus Corridor Well 4, Option 2/ Treatment Site, Option 2	Locked undeveloped lot with grasses 3-12" tall and ground visibility of ~40-50%. Modern refuse including saw cut bone are present as well as krotovina. The area appears to have been tilled/disked. A partially buried vault or cistern made of cinderblock measuring 4.5ft L x 3.5ft W x 4ft D is present in northeast corner of the site. A review of historic aerials found no evidence to suggest the structure is historic in age; additionally there are no diagnostic markings to help date the structure.

Location Name	Description
Treatment Site, Option 3	Current use as a yard for City of Moreno Valley; locked facility. Uneven ground surface at site; drainage channel present in south end of site. Soils are reddish/tan sandy silt with modern refuse present. Two possible geotechnical auger holes present in south corner of site and are approximately 5ft+ in depth. Ground visibility 75-80%.

APPENDIX D: PALEONTOLOGICAL RESOURCE ASSESSMENT

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January 31, 2020
Project No: 19-08223

Rosalyn Prickett
Senior Water Resources Planner
Woodard & Curran
9665 Chesapeake Drive, Suite 320
San Diego, California 92123

Subject: Paleontological Resource Assessment for the Cactus Avenue Corridor Project, City of Moreno Valley, Riverside County, California

Dear Ms. Prickett,

Rincon Consultants, Inc. conducted a paleontological resource assessment for the proposed Cactus Avenue Corridor Project (project); a groundwater extraction, treatment, and distribution development; located in the city of Moreno Valley, Riverside County, California. This study was prepared under contract to Woodard & Curran for use by the Eastern Municipal Water District (EMWD) in support of the draft Initial Study and Mitigated Negative Declaration being prepared pursuant to the California Environmental Quality Act (CEQA). The goals of this assessment are to identify the geologic units that may be impacted by development of the project, determine the paleontological sensitivity of geologic units underlying the project site, assess the potential for impacts to paleontological resources from development of the project, and recommend mitigation measures to reduce impacts to scientifically significant paleontological resources, pursuant to CEQA.

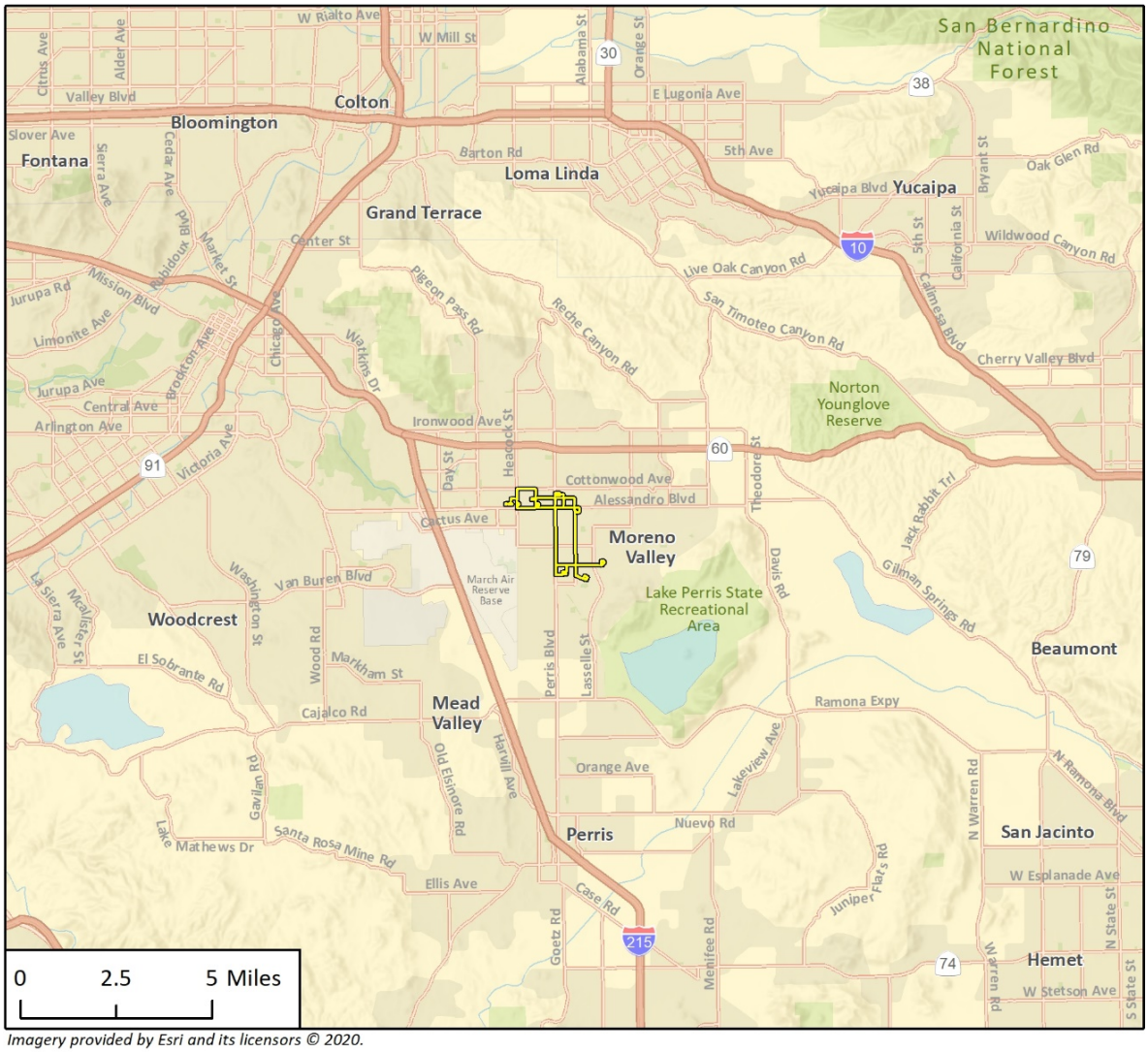
This paleontological resource assessment consisted of a fossil locality record search at the Natural History Museum of Los Angeles County (NHMLAC), a review of existing geologic maps and paleontological locality data, and a review of primary literature regarding fossiliferous geologic units within the project site and vicinity. Following the literature review and records search, this report assessed the paleontological sensitivity of the geologic units underlying the project site, determined the potential for impacts to significant paleontological resources, and proposed mitigation measures to reduce impacts to less than significant.

Project Location and Description

The project site is within the city of Moreno Valley in western Riverside County, California (Figure 1 and Figure 2). More specifically, it is in Township 3 South, Range 3 West, Sections 7, 8, and 17-21 of the United States Geological Survey (USGS) *Riverside East* and *Sunnymead,* California 7.5-minute topographic quadrangles. The project site is in a developed area characterized by a mix of residential, commercial, and light industrial uses.

The project involves the development and operation of groundwater extraction, treatment, and distribution facilities in the Perris North Groundwater Management Zone. The project includes construction and operation of extraction wells, raw water and treated water pipelines, and a water treatment and blending plant. Descriptions of the various project elements are provided below.

Figure 1 Regional Vicinity



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Project Location

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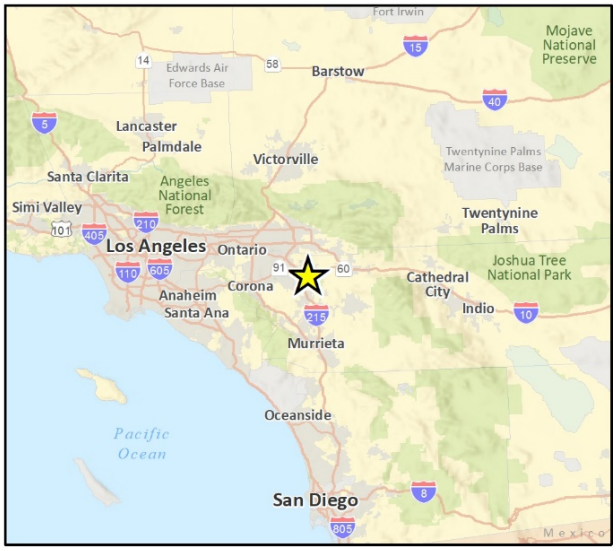
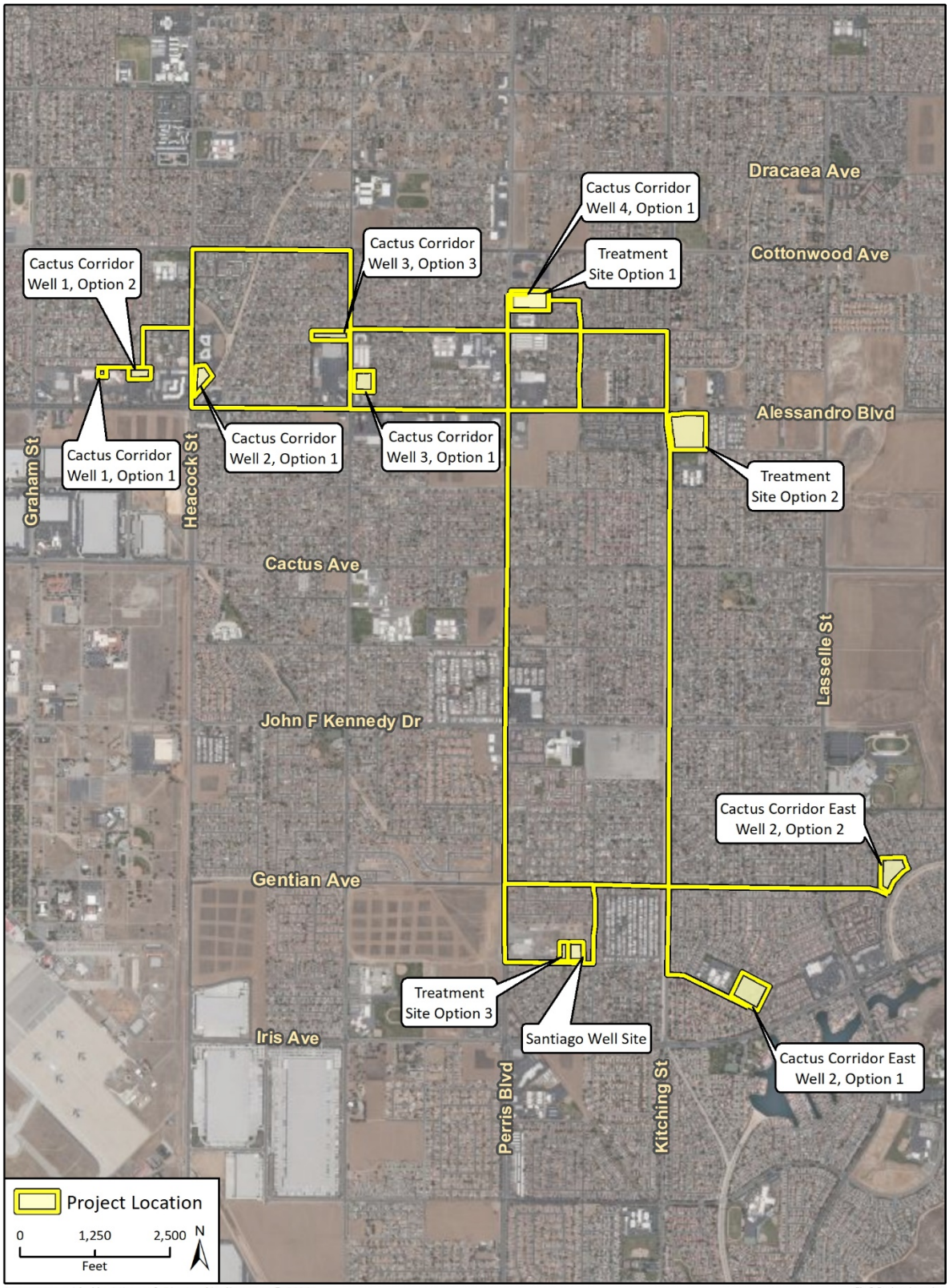


Figure 2 Project Site Vicinity



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Extraction Wells

The project involves the construction of up to six extraction wells. EMWD has identified nine potential locations for the well sites. The extraction wells would be constructed in two phases: a well drilling phase, and a well equipping phase. Construction of the extraction wells is assumed to temporarily disturb 100 percent of each of the parcel sites and would reach up to depths of 1,100 feet below ground surface. Each well site would be designed to utilize the existing grade of the parcel where applicable. Each well would be constructed with an accompanying overflow (i.e., blow-off) pond. Portable, steel liquid container tanks (i.e., Baker Tanks) would be used for on-site dewatering clarification.

Pipelines

Approximately 30,000 linear feet of pipeline would be constructed to convey raw water from the extraction wells to the proposed treatment plant and to convey treated water to the distribution system. These pipelines would be located primarily within easements, roadway rights-of-way, and EMWD-owned land. There would be up to 2,650 linear feet of 30-inch pipeline to convey treated water from the central treatment and blending facility to the distribution system, and up to 30,400 linear feet of pipe to convey raw water from the extraction wells to the treatment and blending facility. The raw water pipeline would vary in diameter from 8-, 12- or 16-inches. There would also be approximately 100 linear feet of 18-inch pipe to discharge brackish water from the central treatment and blending facility to the sanitary sewer system. The future Cactus II Feeder pipelines and turn-outs that would be used for conveyance of Metropolitan Water District of Southern California water for blending are not a part of this environmental analysis; they were analyzed under an Initial Study and Mitigated Negative Declaration, which was adopted by EMWD in August 2018. However, the project also involves approximately 100 linear feet of 30-inch pipeline; which would be constructed between the Cactus II Feeder pipelines, the proposed treatment, and the blending plant facilities.

Pipelines would be installed using open cut trench construction, as well as trenchless boring techniques. Open cut excavation would be used in existing roadways, except at crossings of existing facilities, utilities, and storm channels. Pipelines installed using open cut trenching would reach depths of approximately 3 to 4 feet. The estimated trench width would be equal to two feet plus the pipeline diameter, for a width of up to four feet. When trenchless techniques are required, pipelines would be constructed using “bore and jack” methods. For this construction technique, pits would be excavated on either side of the surface feature to be avoided (e. g., stormwater channel or existing utilities). The pits are typically 10 to 15 feet wide and 10 to20 feet long for the receiving pit and up to 50 feet long for the jacking pit. The depth would depend on the feature to be avoided, but likely would not exceed 40 feet below ground surface.

Treatment Plant

The proposed treatment plant would include granular activated carbon contactors, a blending facility, a potable water distribution pump station and a chlorine residual injection system. A nitrate treatment facility would also need to be constructed at the centralized treatment plant site to be used when blend water of sufficient quality is not available. EMWD has identified two potential sites for the treatment plant.

The raw water from the extraction wells would be treated, and blended with imported water from the Metropolitan Water District of Southern California to meet drinking water standards, and then delivered to a large diameter transmission pipeline in the potable water system that would convey the water to

other parts of EMWD's service area. The water would be disinfected prior to discharging into the potable water system.

Regulatory Setting

Fossils are remains of ancient, commonly extinct organisms, and as such are nonrenewable resources. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is a valuable scientific and educational resource, and individual fossils are afforded protection under federal, state, and local environmental laws, where applicable.

This study has been completed in accordance with the requirements of CEQA and also includes compliance with federal and state regulations in the case a federal nexus is established during the course of project execution. Compliance with both federal and state regulations allows the lead agency (e.g., EMWD) to apply the results of this technical study should a federal nexus be established at a later time. Federal and state regulations applicable to potential paleontological resources in the project site are summarized below.

Federal Regulations

A variety of federal statutes address paleontological resources specifically. They are applicable to all projects occurring on federal lands and may be applicable to specific projects if the project involves a federal agency license, permit, approval, or funding.

The National Environmental Policy Act (United States Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), as amended, directs federal agencies to "preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b) (4))." The current interpretation of this language includes scientifically important paleontological resources among those resources potentially requiring preservation.

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). The PRPA directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. The PRPA prohibits the removal of paleontological resources from federal land without a permit, establishes penalties for violations, and establishes a program to increase public awareness about such resources. While specific to activity occurring on federal lands, some federal agencies may require adherence to the directives outlined in the PRPA for projects on non-federal lands if federal funding is involved, or the project includes federal oversight.

State Regulations

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states in part a project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section VII(f) of Appendix G of the

State CEQA Guidelines, the Environmental Checklist Form, the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review as follows:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here "public lands" means those owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

City of Moreno Valley

The City of Moreno Valley General Plan Goals, Objectives, Policies, and Programs Chapter (City of Moreno Valley 2006) contains one policy pertaining to paleontological resources. The policy is as follows:

- Policy 7-6: In areas where archaeological or paleontological resources are known or reasonably expected to exist, based upon the citywide survey conducted by the University of California, Riverside Archaeological Research Unit, incorporate the recommendations and determinations of that report to reduce potential impacts to levels of insignificance.

Methods

Rincon evaluated the paleontological sensitivity of the geologic units which underlie the project site using the results of the paleontological locality search and review of existing information in the scientific literature concerning known fossils in those geologic units. Rincon submitted a request to the NHMLAC for a list of known fossil localities from the project site and immediate vicinity (i.e., localities recorded on the USGS *Riverside East* and *Sunnymead*, California 7.5-minute topographic quadrangles), reviewed geologic maps, and reviewed primary literature.

Rincon assigned paleontological sensitivities to the geologic units in the project site. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. The SVP (2010) has defined paleontological sensitivity and developed a system for assessing paleontological sensitivity, as discussed below.

Paleontological Sensitivity

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered highly significant.

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines, which are given here verbatim:

I. **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the

paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

III. **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Geologic Setting

The project site is located within the central Perris Block within the northern portion of the Peninsular Ranges Province, one of eleven major geomorphic provinces in California (California Geological Survey 2002). A geomorphic province is a region of unique topography and geology that is readily distinguished from other regions based on its landforms and diastrophic history (Norris and Webb 1990). The Perris Block is a roughly rectangular area of relatively low relief that has remained relatively stable and undeformed during the Neogene (Norris and Webb 1990; Morton and Miller 2006). It is bound by the Cucamonga Fault Zone to the north, the San Jacinto Mountains to the east, the Elsinore Fault Zone to the southwest, and the Chino Basin to the west. According to Morton and Miller (2006) the Perris Block is underlain by lithologically diverse prebatholithic metasedimentary rocks intruded by Cretaceous plutons of the Peninsular Ranges Batholith, which are subsequently overlain by thin to relatively thick, discontinuous sections of nonmarine Quaternary sediments. Quaternary deposits within the Perris Block consist of Pleistocene and Holocene alluvial fan deposits emanating from the nearby San Gabriel Mountains to the north and fluvial deposits from the Santa Ana River, which bisects the Perris Block and flows southward (Norris and Webb 1990; Morton and Miller 2006).

According to published geologic mapping by Dibblee and Minch (2003), the project site is entirely underlain by younger Quaternary (Holocene) alluvium (Qa). Holocene alluvium consists of unconsolidated and undissected alluvial sand, gravel, and clay of valley areas, which are covered with thick soil (Dibblee and Minch 2003). Holocene alluvial deposits in the project site are too young to preserve paleontological resources; however, at shallow or unknown depths, the Holocene sediments may grade downward into deposits of older Quaternary (Pleistocene) alluvium (Qoa) that could preserve fossil remains. Mapped northeast and southeast of the project site, Pleistocene alluvium consists of weakly indurated alluvial fan deposits, composed of tan to light reddish-brown sand and minor gravel derived from local terrains of plutonic rocks, and is dissected by modern stream channels (Dibblee and Minch 2003). Additionally, Dibblee and Minch (2003) map Cretaceous plutonic rocks of the Peninsular Ranges (qdx) east of the project site, and these plutonic deposits may underlie the Quaternary (i.e., Holocene and Pleistocene) sediments within the project site at shallow or unknown depths. Cretaceous plutonic rocks of the Peninsular Ranges consist of medium-grained holocrystalline plutonic rocks, composed mostly of quartz diorite to granodiorite, formed either from the cooling of molten rock deep below the surface under high heat and high pressure or from cooling magma injected into older rocks.

Pleistocene alluvial deposits have a well-documented record of abundant and diverse vertebrate fauna recorded throughout California. Vertebrate fossil taxa recorded in Riverside County include horse, tapir, bison, camelid, deer, mastodon, mammoth, ground sloth, canine, rabbit, and rodent; and Pleistocene fossil localities recorded throughout southern California in general yielded fossil whale, sea lion, horse, tapir, ground sloth, bison, peccary, camel, deer, pronghorn, mammoth, short-faced bear, saber-toothed cat, mountain lion, wolf, fox, skunk, rabbit, bat, shrew, mole, pocket gopher, deer mouse, kangaroo rat, pack rat, bird, tortoise, turtle, snake, frog, toad, salamander, bony fish, shark, and ray, as well as invertebrates, such as insect and snail (Agenbroad 2003; Bell et al. 2004; Jefferson 1985, 1989, 1991; Maguire and Holroyd 2016; Merriam 1911; Paleobiology Database 2020; Reynolds et al. 1991; Savage 1951; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2011; Wilkerson et al. 2011; Winters 1954; University of California Museum of Paleontology 2020). Figure 3, Geologic Units and Paleontological Sensitivity of the Project Site, depicts the surficial geologic units in the project site and its immediate vicinity, as well as the paleontological sensitivity within the bounds of the project site.

Results

Locality Search

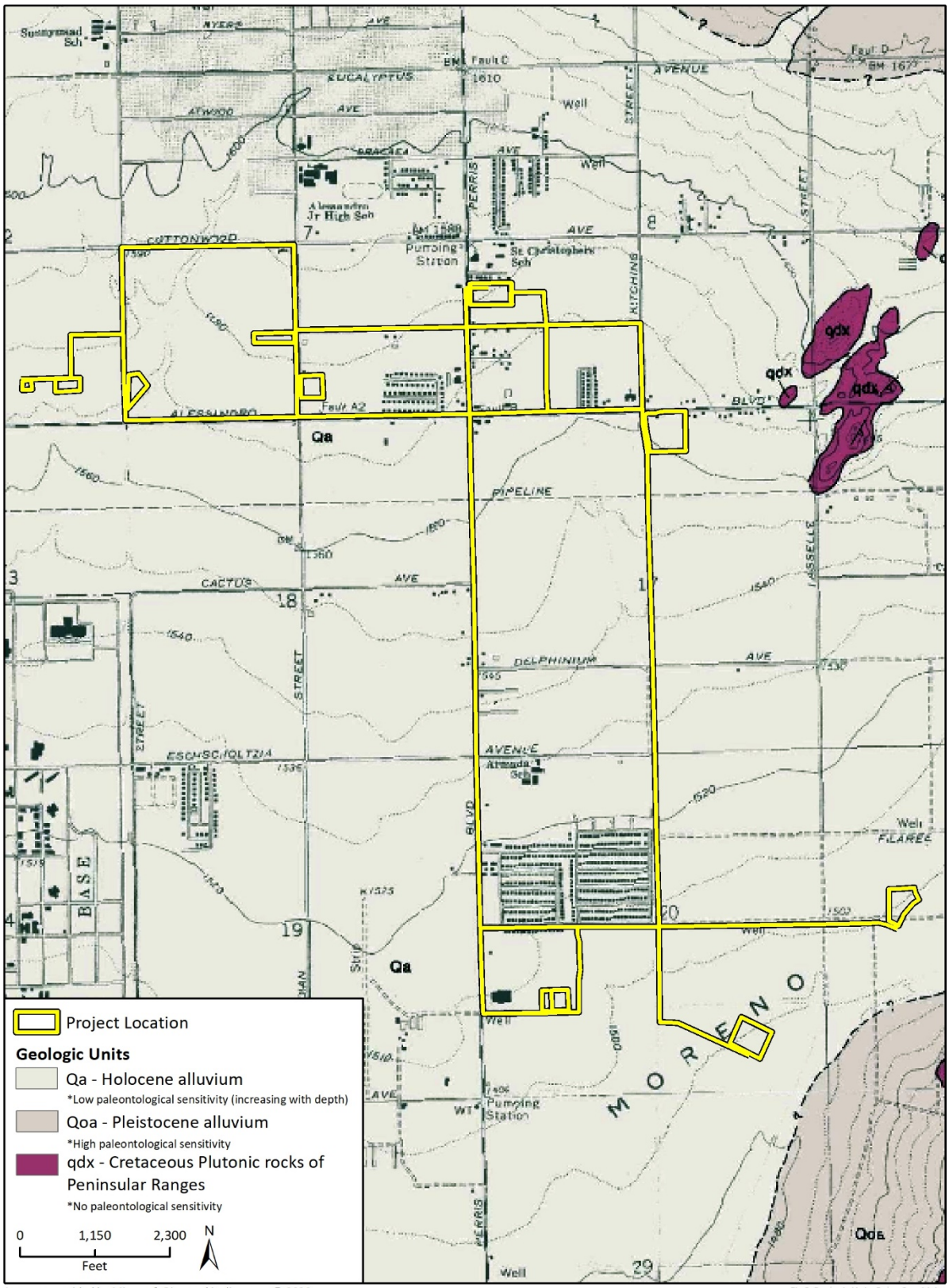
A search of the paleontological locality records at the NHMLAC resulted in no previously recorded fossil localities in the project site; however, one vertebrate locality, LACM 4540, which yielded a horse (*Equus* sp.) from Pleistocene alluvial deposits, was documented east of the project site within gravel pits in the San Jacinto Valley (McLeod 2020). Depth of recovery was unreported.

Records maintained by the Western Science Center (WSC) indicate several fossil localities nearby the project site. WSC localities 192, 193, and 194 rendered fossil ground sloth (*Megalonyx jeffersonii*), lamine camel (*Hemiauchenia* sp.), and horse (*Equus* sp.) approximately four miles northeast of the project site (LSA 2014; Radford 2019). Fossils from these localities were recovered from 11 to 13 feet below ground surface within Pleistocene alluvial fan deposits (LSA 2014; Radford 2019).

Paleontological Sensitivity

In accordance with SVP (2010) guidelines, Rincon determined the paleontological sensitivity of the project site based on a geologic map review, literature review, and museum locality search. Holocene alluvium mapped at the surface of the project site has a low paleontological sensitivity because Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. Cretaceous plutonic rocks of the Peninsular Ranges, which are mapped east of the project site, have no paleontological sensitivity since the physical parameters of their formation are not conducive to fossil preservation. However, Holocene sediments are underlain by Pleistocene alluvium at a depth as shallow as 11 feet below ground surface based on the presence of Pleistocene vertebrate fossils recovered at depths of 11 to 13 feet within the vicinity of the project site (LSA 2014; Radford 2019). Pleistocene alluvium has a high paleontological sensitivity based on the potential to yield scientifically significant paleontological resources.

Figure 3 Geologic Units and Paleontological Sensitivity of the Project Site



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Geological basemap provided by Dibblee (2003), Geologic Map of the Sunnymead/South 1/2 of Redlands Quadrangle

Findings and Recommendations

Ground-disturbing activities in previously undisturbed portions of the project site underlain by geologic units with a high paleontological sensitivity (i.e., Pleistocene alluvial deposits) may result in significant impacts to paleontological resources under Appendix G of State CEQA Guidelines. Impacts would be significant if construction activities result in the destruction, damage, or loss of scientifically important paleontological resources and associated stratigraphic and paleontological data. The activities may include grading, excavation, or other activities that disturb substantial quantities of the subsurface geologic units with a high paleontological sensitivity.

As currently proposed, project ground disturbance would reach a maximum depth of four feet during open cut trenching, approximately 40 feet during “bore and jack” horizontal drilling, and 1,100 feet during well drilling. Disturbance to intact Pleistocene sediments from well drilling would be limited due the small diameter (i.e., less than three feet) of the auger and impacts to paleontological resources due to well drilling would be negligible. Impacts to paleontological resources associated with “bore and jack” horizontal drilling would also be negligible as this type of ground disturbance does not generally result in the removal of observable geologic sediments.

In the project site, the Holocene deposits overlie the paleontologically sensitive Pleistocene sediments at a moderate depth of approximately 11 feet below ground surface (LSA 2014; Radford 2019). Given that the fossiliferous deposits may occur at greater depths than anticipated project disturbance associated with trenching activities, the potential for encountering fossil resources during project-related ground disturbance is low and impacts to paleontological resources are not anticipated.

Further paleontological resources work is not recommended at this time; however, the following measure is recommended in the case of unanticipated fossil discoveries. This measure would apply to all phases of project construction and would provide that any unanticipated fossils present on site are preserved and that potential impacts to paleontological resources would be less than significant by providing for the recovery, identification and curation of previously unrecovered fossils.

- In the event an unanticipated fossil discovery is made during the course of project development, then in accordance with SVP (2010) guidelines, it is the responsibility of any worker who observes fossils within the project site to stop work in the immediate vicinity of the find and notify a qualified professional paleontologist who shall be retained to evaluate the discovery, determine its significance and if additional mitigation or treatment is warranted. Work in the area of the discovery will resume once the find is properly documented and authorization is given to resume construction work. Any significant paleontological resources found during construction monitoring will be prepared, identified, analyzed, and permanently curated in an approved regional museum repository.

If you have any questions regarding this Paleontological Resource Assessment, please contact us.

Sincerely,

Rincon Consultants, Inc.

Jorge Mendieta, BA
Associate Paleontologist

Jessica DeBusk, BS, MBA
Principal Investigator/Program Manager

Jennifer Haddow, PhD
Principal Environmental Scientist

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APPENDIX E: NOISE MEASUREMENTS

- Freq Weight : A
- Time Weight : SLOW
- Level Range : 40-100
- Max dB : 101.8 - 2020/01/28 23:09:22
- Level Range : 40-100
- SEL : 119.3
- Leq : 70.0
-

No.s	Date Time	(dB)
1	2020/01/28 13:26:51	62.4
2	2020/01/28 13:29:51	74.5
3	2020/01/28 13:32:51	82.8
4	2020/01/28 13:35:51	65.3
5	2020/01/28 13:38:51	75.6
6	2020/01/28 13:41:51	66.6
7	2020/01/28 13:44:51	67.6
8	2020/01/28 13:47:51	75.4
9	2020/01/28 13:50:51	66.2
10	2020/01/28 13:53:51	72.8
11	2020/01/28 13:56:51	71.9
12	2020/01/28 13:59:51	63.4
13	2020/01/28 14:02:51	73.9
14	2020/01/28 14:05:51	63.6
15	2020/01/28 14:08:51	66.9
16	2020/01/28 14:11:51	90.0
17	2020/01/28 14:14:51	61.6
18	2020/01/28 14:17:51	68.4
19	2020/01/28 14:20:51	73.5
20	2020/01/28 14:23:51	63.7
21	2020/01/28 14:26:51	72.1
22	2020/01/28 14:29:51	71.6
23	2020/01/28 14:32:51	54.9
24	2020/01/28 14:35:51	66.8
25	2020/01/28 14:38:51	69.3
26	2020/01/28 14:41:51	56.6
27	2020/01/28 14:44:51	73.2
28	2020/01/28 14:47:51	52.3
29	2020/01/28 14:50:51	68.0
30	2020/01/28 14:53:51	69.5
31	2020/01/28 14:56:51	68.2
32	2020/01/28 14:59:51	66.5
33	2020/01/28 15:02:51	50.7
34	2020/01/28 15:05:51	65.2
35	2020/01/28 15:08:51	76.5
36	2020/01/28 15:11:51	74.2
37	2020/01/28 15:14:51	51.9
38	2020/01/28 15:17:51	73.0
39	2020/01/28 15:20:51	56.7
40	2020/01/28 15:23:51	73.7
41	2020/01/28 15:26:51	73.7
42	2020/01/28 15:29:51	65.7
43	2020/01/28 15:32:51	76.1
44	2020/01/28 15:35:51	73.1
45	2020/01/28 15:38:51	64.8
46	2020/01/28 15:41:51	71.1
47	2020/01/28 15:44:51	61.0
48	2020/01/28 15:47:51	64.2
49	2020/01/28 15:50:51	74.7
50	2020/01/28 15:53:51	51.4
51	2020/01/28 15:56:51	68.5
52	2020/01/28 15:59:51	54.3
53	2020/01/28 16:02:51	51.0
54	2020/01/28 16:05:51	67.0
55	2020/01/28 16:08:51	69.0
56	2020/01/28 16:11:51	53.9
57	2020/01/28 16:14:51	76.6
58	2020/01/28 16:17:51	73.2
59	2020/01/28 16:20:51	67.6
60	2020/01/28 16:23:51	70.8
61	2020/01/28 16:26:51	71.2
62	2020/01/28 16:29:51	71.5
63	2020/01/28 16:32:51	69.2
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65	2020/01/28 16:38:51	74.8
66	2020/01/28 16:41:51	72.6
67	2020/01/28 16:44:51	72.5
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71	2020/01/28 16:56:51	75.4
72	2020/01/28 16:59:51	62.5
73	2020/01/28 17:02:51	68.5
74	2020/01/28 17:05:51	73.2
75	2020/01/28 17:08:51	50.7
76	2020/01/28 17:11:51	76.3
77	2020/01/28 17:14:51	76.8
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79	2020/01/28 17:20:51	70.5
80	2020/01/28 17:23:51	49.6
81	2020/01/28 17:26:51	58.4
82	2020/01/28 17:29:51	48.4
83	2020/01/28 17:32:51	50.5
84	2020/01/28 17:35:51	72.8
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91	2020/01/28 17:56:51	72.4
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93	2020/01/28 18:02:51	74.9
94	2020/01/28 18:05:51	62.2
95	2020/01/28 18:08:51	64.2
96	2020/01/28 18:11:51	72.1
97	2020/01/28 18:14:51	50.4
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102	2020/01/28 18:29:51	75.4
103	2020/01/28 18:32:51	57.8
104	2020/01/28 18:35:51	74.0
105	2020/01/28 18:38:51	67.0
106	2020/01/28 18:41:51	60.4
107	2020/01/28 18:44:51	74.0
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137	2020/01/28 20:14:51	58.8
138	2020/01/28 20:17:51	77.0
139	2020/01/28 20:20:51	74.2
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142	2020/01/28 20:29:51	59.0
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206	2020/01/28	23:41:51	55.3
207	2020/01/28	23:44:51	60.0
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210	2020/01/28	23:53:51	55.8
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224	2020/01/29	00:35:51	57.7
225	2020/01/29	00:38:51	69.1
226	2020/01/29	00:41:51	55.9
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229	2020/01/29	00:50:51	50.1
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231	2020/01/29	00:56:51	59.7
232	2020/01/29	00:59:51	48.9
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234	2020/01/29	01:05:51	50.7
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240	2020/01/29	01:23:51	54.9
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260	2020/01/29	02:23:51	50.3
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279	2020/01/29	03:20:51	52.6
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331	2020/01/29	05:56:51	70.7
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335	2020/01/29	06:08:51	73.9
336	2020/01/29	06:11:51	63.9
337	2020/01/29	06:14:51	69.0
338	2020/01/29	06:17:51	76.6
339	2020/01/29	06:20:51	73.6
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366	2020/01/29	07:41:51	72.7
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372	2020/01/29	07:59:51	74.3
373	2020/01/29	08:02:51	72.4
374	2020/01/29	08:05:51	65.6
375	2020/01/29	08:08:51	71.9
376	2020/01/29	08:11:51	72.4
377	2020/01/29	08:14:51	74.6
378	2020/01/29	08:17:51	75.9
379	2020/01/29	08:20:51	60.0
380	2020/01/29	08:23:51	76.8
381	2020/01/29	08:26:51	73.5
382	2020/01/29	08:29:51	65.2

383	2020/01/29	08:32:51	73.5
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385	2020/01/29	08:38:51	61.7
386	2020/01/29	08:41:51	70.8
387	2020/01/29	08:44:51	73.8
388	2020/01/29	08:47:51	70.5
389	2020/01/29	08:50:51	74.1
390	2020/01/29	08:53:51	55.2
391	2020/01/29	08:56:51	72.6
392	2020/01/29	08:59:51	73.2
393	2020/01/29	09:02:51	66.6
394	2020/01/29	09:05:51	74.7
395	2020/01/29	09:08:51	69.4
396	2020/01/29	09:11:51	57.3
397	2020/01/29	09:14:51	70.3
398	2020/01/29	09:17:51	76.1
399	2020/01/29	09:20:51	67.3
400	2020/01/29	09:23:51	68.0
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402	2020/01/29	09:29:51	77.7
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404	2020/01/29	09:35:51	61.0
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416	2020/01/29	10:11:51	70.0
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422	2020/01/29	10:29:51	67.7
423	2020/01/29	10:32:51	61.0
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479	2020/01/29	13:20:51	72.8
480	2020/01/29	13:23:51	71.9

- Freq Weight : A
- Time Weight : SLOW
- Level Range : 40-100
- Max dB : 76.6 - 2020/01/29 21:41:01
- Level Range : 40-100
- SEL : 97.2
- Leq : 47.9
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4	2020/01/29 17:35:33	58.8
5	2020/01/29 17:38:33	54.9
6	2020/01/29 17:41:33	53.5
7	2020/01/29 17:44:33	50.7
8	2020/01/29 17:47:33	57.6
9	2020/01/29 17:50:33	57.6
10	2020/01/29 17:53:33	51.3
11	2020/01/29 17:56:33	58.6
12	2020/01/29 17:59:33	54.8
13	2020/01/29 18:02:33	55.0
14	2020/01/29 18:05:33	50.8
15	2020/01/29 18:08:33	52.0
16	2020/01/29 18:11:33	52.2
17	2020/01/29 18:14:33	50.2
18	2020/01/29 18:17:33	48.8
19	2020/01/29 18:20:33	47.6
20	2020/01/29 18:23:33	46.8
21	2020/01/29 18:26:33	45.4
22	2020/01/29 18:29:33	46.4
23	2020/01/29 18:32:33	48.8
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32	2020/01/29 18:59:33	46.9
33	2020/01/29 19:02:33	45.0
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37	2020/01/29 19:14:33	48.4
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335	2020/01/30 10:08:33	39.4
336	2020/01/30 10:11:33	39.7
337	2020/01/30 10:14:33	50.6
338	2020/01/30 10:17:33	45.6
339	2020/01/30 10:20:33	37.1
340	2020/01/30 10:23:33	50.5
341	2020/01/30 10:26:33	38.3
342	2020/01/30 10:29:33	40.1
343	2020/01/30 10:32:33	42.5
344	2020/01/30 10:35:33	42.3
345	2020/01/30 10:38:33	43.3
346	2020/01/30 10:41:33	40.5
347	2020/01/30 10:44:33	59.2
348	2020/01/30 10:47:33	36.5
349	2020/01/30 10:50:33	44.6
350	2020/01/30 10:53:33	37.3
351	2020/01/30 10:56:33	39.0
352	2020/01/30 10:59:33	42.0
353	2020/01/30 11:02:33	42.9
354	2020/01/30 11:05:33	38.6
355	2020/01/30 11:08:33	42.3
356	2020/01/30 11:11:33	42.7
357	2020/01/30 11:14:33	40.8
358	2020/01/30 11:17:33	43.9
359	2020/01/30 11:20:33	41.4
360	2020/01/30 11:23:33	38.5
361	2020/01/30 11:26:33	49.4
362	2020/01/30 11:29:33	56.5
363	2020/01/30 11:32:33	43.0
364	2020/01/30 11:35:33	38.9
365	2020/01/30 11:38:33	42.5
366	2020/01/30 11:41:33	39.8
367	2020/01/30 11:44:33	38.3
368	2020/01/30 11:47:33	36.8
369	2020/01/30 11:50:33	38.1
370	2020/01/30 11:53:33	40.1
371	2020/01/30 11:56:33	39.5
372	2020/01/30 11:59:33	37.9
373	2020/01/30 12:02:33	45.2
374	2020/01/30 12:05:33	39.0
375	2020/01/30 12:08:33	35.2
376	2020/01/30 12:11:33	43.9
377	2020/01/30 12:14:33	39.8
378	2020/01/30 12:17:33	44.2
379	2020/01/30 12:20:33	37.8
380	2020/01/30 12:23:33	35.3
381	2020/01/30 12:26:33	37.1
382	2020/01/30 12:29:33	36.1

383	2020/01/30 12:32:33	36.4
384	2020/01/30 12:35:33	39.3
385	2020/01/30 12:38:33	38.6
386	2020/01/30 12:41:33	37.1
387	2020/01/30 12:44:33	36.9
388	2020/01/30 12:47:33	41.0
389	2020/01/30 12:50:33	36.3
390	2020/01/30 12:53:33	40.0
391	2020/01/30 12:56:33	38.3
392	2020/01/30 12:59:33	37.1
393	2020/01/30 13:02:33	36.3
394	2020/01/30 13:05:33	35.7
395	2020/01/30 13:08:33	42.5
396	2020/01/30 13:11:33	43.8
397	2020/01/30 13:14:33	36.3
398	2020/01/30 13:17:33	50.0
399	2020/01/30 13:20:33	49.9
400	2020/01/30 13:23:33	42.6
401	2020/01/30 13:26:33	44.2
402	2020/01/30 13:29:33	40.3
403	2020/01/30 13:32:33	38.4
404	2020/01/30 13:35:33	43.6
405	2020/01/30 13:38:33	36.0
406	2020/01/30 13:41:33	38.9
407	2020/01/30 13:44:33	39.3
408	2020/01/30 13:47:33	37.7
409	2020/01/30 13:50:33	37.5
410	2020/01/30 13:53:33	37.9
411	2020/01/30 13:56:33	37.7
412	2020/01/30 13:59:33	40.3
413	2020/01/30 14:02:33	43.9
414	2020/01/30 14:05:33	40.4
415	2020/01/30 14:08:33	48.8
416	2020/01/30 14:11:33	47.5
417	2020/01/30 14:14:33	45.9
418	2020/01/30 14:17:33	40.2
419	2020/01/30 14:20:33	36.5
420	2020/01/30 14:23:33	39.9
421	2020/01/30 14:26:33	36.8
422	2020/01/30 14:29:33	39.1
423	2020/01/30 14:32:33	37.9
424	2020/01/30 14:35:33	40.3
425	2020/01/30 14:38:33	37.9
426	2020/01/30 14:41:33	38.9
427	2020/01/30 14:44:33	35.1
428	2020/01/30 14:47:33	37.9
429	2020/01/30 14:50:33	34.4
430	2020/01/30 14:53:33	34.9
431	2020/01/30 14:56:33	37.9
432	2020/01/30 14:59:33	35.6
433	2020/01/30 15:02:33	38.0
434	2020/01/30 15:05:33	37.2
435	2020/01/30 15:08:33	37.7
436	2020/01/30 15:11:33	45.3
437	2020/01/30 15:14:33	40.6
438	2020/01/30 15:17:33	37.7
439	2020/01/30 15:20:33	42.7
440	2020/01/30 15:23:33	36.9
441	2020/01/30 15:26:33	46.1
442	2020/01/30 15:29:33	41.8
443	2020/01/30 15:32:33	47.4
444	2020/01/30 15:35:33	38.5
445	2020/01/30 15:38:33	32.4
446	2020/01/30 15:41:33	44.5
447	2020/01/30 15:44:33	34.6
448	2020/01/30 15:47:33	42.9
449	2020/01/30 15:50:33	43.3
450	2020/01/30 15:53:33	44.6
451	2020/01/30 15:56:33	45.0
452	2020/01/30 15:59:33	33.3
453	2020/01/30 16:02:33	34.5
454	2020/01/30 16:05:33	41.7
455	2020/01/30 16:08:33	35.3
456	2020/01/30 16:11:33	38.3
457	2020/01/30 16:14:33	36.7
458	2020/01/30 16:17:33	39.3
459	2020/01/30 16:20:33	37.5
460	2020/01/30 16:23:33	37.3
461	2020/01/30 16:26:33	47.6
462	2020/01/30 16:29:33	42.7
463	2020/01/30 16:32:33	42.7
464	2020/01/30 16:35:33	41.3
465	2020/01/30 16:38:33	42.3
466	2020/01/30 16:41:33	41.2
467	2020/01/30 16:44:33	41.3
468	2020/01/30 16:47:33	42.9
469	2020/01/30 16:50:33	46.0
470	2020/01/30 16:53:33	43.7
471	2020/01/30 16:56:33	43.4
472	2020/01/30 16:59:33	42.0
473	2020/01/30 17:02:33	46.3
474	2020/01/30 17:05:33	51.0
475	2020/01/30 17:08:33	43.4
476	2020/01/30 17:11:33	39.6
477	2020/01/30 17:14:33	56.9
478	2020/01/30 17:17:33	45.9
479	2020/01/30 17:20:33	43.9
480	2020/01/30 17:23:33	43.0

Project	Cactus Avenue Corridor CEQA
Project Number	0011292.01
Agency	Eastern Municipal Water District
By	Jennifer Kidson
Date	November 21, 2019
Audited by	Haley Johnson
Date	November 22, 2019
Task Description	Model noise from well drilling activities at night using RCNM.

Summary of Results
Calculated Noise Level (dBA) at
Various Distances to Receptor, with
Various Levels of Shielding, and with
Various Construction Equipment Fleets

		Distances between Extraction Well Construction Site and Receptor			
		25 feet	50 feet	100 feet	200 feet
Well Drill Rig Operating Alone	0 dBA Shielding	96	90	84	78
	5 dBA Shielding	91	85	79	73
	10 dBA Shielding	86	80	74	68
	15 dBA Shielding	81	75	69	63
	25 dBA Shielding	71	65	59	53
Well Drill Rig Operating Simultaneously with Pickup and Backhoe	0 dBA Shielding	96.2	90.2	84.1	78.1
	5 dBA Shielding	91.2	85.2	79.1	73.1
	10 dBA Shielding	86.2	80.2	74.1	68.1
	15 dBA Shielding	81.2	75.2	69.1	63.1
	25 dBA Shielding	71.2	65.2	59.1	53.1

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-0shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	0
Backhoe	No	40		77.6	25	0
Pickup Truck	No	40		75	25	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	81	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	96	96.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	0
Backhoe	No	40		77.6	50	0
Pickup Truck	No	40		75	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		75	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	90	90.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	100	0
Backhoe	No	40		77.6	100	0
Pickup Truck	No	40		75	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		71.5	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		69	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	84	84.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	200	0

Backhoe	No	40	77.6	200	0
Pickup Truck	No	40	75	200	0

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	63	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-5shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	5
Backhoe	No	40		77.6	25	5
Pickup Truck	No	40		75	25	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	78.6	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	76	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91	91.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	5
Backhoe	No	40		77.6	50	5
Pickup Truck	No	40		75	50	5

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		72.6	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	85.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	5
Backhoe	No	40		77.6	100	5
Pickup Truck	No	40		75	100	5

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		66.5	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		64	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79	79.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	5

Backhoe	No	40	77.6	200	5
Pickup Truck	No	40	75	200	5

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	60.5	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	58	54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-10shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	10
Backhoe	No	40		77.6	25	10
Pickup Truck	No	40		75	25	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	73.6	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	71	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86	86.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	10
Backhoe	No	40		77.6	50	10
Pickup Truck	No	40		75	50	10

Results

Calculated (dBA) Noise Limits (dBA) Noise Limit Exceedance (dBA)

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig		80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		67.6	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		65	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90		100	10
Backhoe	No	40	77.6		100	10
Pickup Truck	No	40	75		100	10

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig	74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	61.5	57.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	59	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	74.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90		200	10
Backhoe	No	40	77.6		200	10
Pickup Truck	No	40	75		200	10

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	55.5	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	53	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-15shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	15
Backhoe	No	40		77.6	25	15
Pickup Truck	No	40		75	25	15

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	66	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	15
Backhoe	No	40		77.6	50	15
Pickup Truck	No	40		75	50	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		62.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		60	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75	75.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	100	15
Backhoe	No	40		77.6	100	15
Pickup Truck	No	40		75	100	15

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig		69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		56.5	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		54	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	69	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Well Drill Rig	No	100		90	200	15

Backhoe	No	40	77.6	200	15
Pickup Truck	No	40	75	200	15

			Results											
	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	50.5	46.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	48	44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-WellBackhoeTruck-25shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	25
Backhoe	No	40		77.6	25	25
Pickup Truck	No	40		75	25	25

Results

	Calculated (dBA)		Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	71	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	58.6	54.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	56	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	25
Backhoe	No	40		77.6	50	25
Pickup Truck	No	40		75	50	25

Results

Calculated (dBA) | Noise Limits (dBA) | Noise Limit Exceedance (dBA)

Equipment		*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig		65	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		52.6	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck		50	46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	65	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	25
Backhoe	No	40		77.6	100	25
Pickup Truck	No	40		75	100	25

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Well Drill Rig	59	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	46.5	42.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	44	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	59	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	25
Backhoe	No	40		77.6	200	25
Pickup Truck	No	40		75	200	25

			Results											
	Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	53	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	40.5	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pickup Truck	38	34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-0shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	96	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	90	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	100	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	200	0	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	78	78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-5shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85	85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	100	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	200	5

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-10shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	10

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	100	10	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	200	10	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68	68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/22/2019
Case Description: Cactus-Well-15shield

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-25 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	25	15

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-50 feet	Residential	65	55	45

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100		90	50	15

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-100 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	100	15	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor-200 feet	Residential	65	55	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Well Drill Rig	No	100	90	200	15	

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Well Drill Rig	63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

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