City of Santa Ana
Well No. 32 Rehabilitation Project

DRAFT

Initial Study/Mitigated Negative Declaration

Prepared For:

City of Santa Ana
Public Works Agency
220 S. Daisy Avenue
Santa Ana, California 92703
Contact: Armando Fernandez, Senior Civil Engineer, P.E.
714.647.3316

Prepared by:

Tetra Tech, Inc.
17885 Von Karman Ave. Suite 500
Irvine, CA 92614-5227
Contact: Paula Fell
Environmental Task Manager
949.809.5147

October 2019

WELL NO. 32 REHABILITATION PROJECT

PROPOSED MITIGATED NEGATIVE DECLARATION AND NOTICE OF INTENT TO ADOPT THE PROPOSED MITIGATED NEGATIVE DECLARATION

This serves as the City of Santa's Notice of Intent to adopt a Mitigated Negative Declaration for the Well No. 32 Rehabilitation Project, prepared in accordance with the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Name of Project: City of Santa Ana Well No. 32 Rehabilitation Project

Project Location: The proposed City of Santa Ana Well No. 32 Rehabilitation Project ("Project") site is located in the City of Santa Ana, in the central portion of Orange County (County), within Township 4 South, Range 10 West (unsectioned), Township 5 South, Range 10 West, Section 1, on the Anaheim, California, U.S. Geological Survey 7.5-minute Quadrangle Map (1977). Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. A new proposed pipeline will connect the well to the existing John Garthe Reservoir traversing North Westwood Avenue to West Memory Lane to North Bristol Street.

Lead Agency: City of Santa Ana, Public Works Agency
220 S. Daisy Avenue
Santa Ana, California 92703

Project Description: The City of Santa Ana is proposing to rehabilitate existing Well No. 32 by removing the existing pump and installing a new one with a variable frequency drive to pump well water. The Project includes construction of approximately 3,250 linear feet of new pipeline to pump the well water to the existing John Garthe Reservoir. The project also includes a new above ground well building with an electrical room and a separate chemical facility building for on-site generation of sodium hypochlorite to disinfect well production waters. Appurtenant features include demolition of underground facilities, site improvements and landscaping.

The City encompasses 27.5 square miles and has a population of over 325,000 people. The City operates a water distribution system which includes more than 450 miles of water mains and over 44,000 water services. The City's potable water is obtained by using a combination of pumping from the Orange County Groundwater Basin using 21 existing groundwater wells and importing water via seven (7) Metropolitan Water District pipeline connections. The City has some wells that produce groundwater with elevated nitrate levels. The City has developed a Nitrate Blending Plan that mixes the high nitrate groundwater with low nitrate groundwater. One of the high nitrate wells is Well No. 32 and it has been inactive for over nine (9) years due to low operating efficiencies and high nitrate levels.

It is the City's goal to rehabilitate Well No. 32 and re-commission the well for service. Instead of treating the high nitrates at the well site and impacting Morrison Park, the City intends to incorporate Well No. 32 into its existing Nitrate Blending Plan. Water from Well No. 32 will be pumped to the John Garthe Reservoir site. At the John Garthe Reservoir site, the City blends low nitrate water from Well Nos. 36 and 39 (both located at the reservoir site) with higher nitrate water from Well Nos.

18, 24 and once reinstated, Well No. 32. By reinstating Well No. 32, the City can more effectively improve its water supply reliability and help ease the burden on the other water production distribution facilities.

The disturbed surface area for the rehabilitation of Well No. 32 and construction of the associated pipeline is approximately 0.278 acres. Construction is anticipated to begin in the first quarter of 2020 and continue for approximately 14 months. Once operational, the potential production capacity of rehabilitated Well No. 32 is expected to range from 2,000 to as much as 2,500 gallons per minute.

The Project site is not designated a hazardous waste property, or a hazardous waste disposal site as enumerated under Section 65962.5 of the California Government Code.

NOTICE IS HEREBY GIVEN THAT the City of Santa Ana proposes to adopt a Mitigated Negative Declaration for the above-cited Project. Such Mitigated Negative Declaration is based on the finding that, by implementing the identified mitigation measures, the Project's potential impacts will be maintained at a less than significant level. The reasons to support such a finding are documented by the Initial Study prepared by the City of Santa Ana. Copies of the Initial Study, the proposed Mitigated Negative Declaration and supporting materials are available for review at the City of Santa Ana, Public Works Agency located at 220 S. Daisy Avenue, Santa Ana, CA 92703.

For questions regarding the Mitigated Negative Declaration, please contact:

NAME: Armando Fernandez, P.E. **PHONE**: 714.647.3316

TITLE: Senior Civil Engineer **EMAIL:** AFernandez@santa-ana.org

ADDRESS: City of Santa Ana
Public Works Agency
220 S. Daisy Avenue
Santa Ana, CA 92703

Public Review Period: **30 days** **Begins: 10/24/2019** **Ends: 11/22/2019**

Public Hearing: Consideration of adoption of the Mitigated Negative Declaration via public hearing by the City of Santa Ana is scheduled to take place on January 21, 2020 at 5:45 p.m. at the City of Santa Ana located at 22 Civic Center Plaza, Santa Ana, CA 92702.

In accordance with CEQA Guidelines, any comments concerning the findings of the proposed Initial Study/Mitigated Negative Declaration must be submitted in writing and **received by the City of Santa Ana no later than 5:00 p.m. on November 22, 2019**, in order to be considered prior to the City of Santa Ana's final determination on the Project. Please submit your written comments to Armando Fernandez, P.E., Senior Civil Engineer, City of Santa Ana, Public Works Agency located at 220 S. Daisy Avenue, Santa Ana, CA 92703.

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

List of Tables

List of Figures

Appendices

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
API	area of potential impact
AQMP	Air Quality Management Plan
Basin	South Coast Air Basin
BMP	Best Management Practices
BP	before present
CalEEMod	California Emissions Estimator Model®
CEQA	California Environmental Quality Act
CH_4	methane
City	City of Santa Ana
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
dB	decibel scale
dBA	A-weighted sound level
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
gpm	gallons per minute
HP	horse-power
kWh	kilowatt hour
lbs/day	pounds per day
LST	localized significance threshold
MLD	Most Likely Descendant
MWD	Metropolitan Water District
NAHC	Native American Heritage Commission
NaOCl	sodium hypochlorite
N_2O	nitrous oxide
NPDES	National Pollutant Discharge Elimination System
OCFA	Orange County Fire Authority
PM_{10}	inhalable particulate matter

$PM_{2.5}$	fine particulate matter
PRC	Public Resources Code
Project	City of Santa Ana Water Well No. 32
PVC	polyvinyl chloride
RCPG	Regional Comprehensive Plan and Guide
SoCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCE	Southern California Edison
VdB	velocity level in decibels

1.0 INTRODUCTION

The City of Santa Ana (City) is proposing to rehabilitate existing Well No. 32 by removing the existing pump and installing a new one with a variable frequency drive to pump well water. The Project includes construction of approximately 3,250 linear feet of new pipeline to pump the well water to the existing John Garthe Reservoir. The project also includes a new above ground well pump building with an electrical room and a separate chemical facility building for on-site generation of sodium hypochlorite to disinfect well production waters. Appurtenant features include demolition of underground facilities, site improvements and landscaping.

The City of Santa Ana Water Well No. 32 Project (herein referenced as "Project") is needed to improve the water supply reliability and help ease the burden on the other water production distribution facilities.

Following initial review of the proposed Project, the City has determined that it is subject to the guidelines and regulations of the California Environmental Quality Act (CEQA). This Initial Study addresses the environmental effects of the Project, as proposed.

1.1 STATUTORY AUTHORITY AND REQUIREMENTS

This Mitigated Negative Declaration has been prepared by the City with technical assistance from Tetra Tech, Inc. to evaluate if implementation of the Project would have a significant effect on the environment. Pursuant to Section 15070 of the *Guidelines for Implementation of the California Environmental Quality Act* (14 California Code of Regulations §§ 15070-15075), a public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

1.2 REQUIRED CONTENT

CEQA Guidelines Section 15071 indicate that a Negative Declaration circulated for public review shall include:

(a) A brief description of the project, including a commonly used name for the project, if any;

(b) The location of the project, preferably shown on a map, and the name of the project proponent;

(c) A proposed finding that the project will not have a significant effect on the environment;

(d) An attached copy of the Initial Study documenting reasons to support the finding; and

(e) Mitigation measures, if any, included in the project to avoid potentially significant effects.

This page intentionally left blank

2.0 PROJECT INFORMATION

Project title:	City of Santa Ana Well No. 32 Rehabilitation Project
Lead agency name and address:	**City of Santa Ana** **Public Works Agency** 220 S. Daisy Avenue Santa Ana, California 92703
Contact person and phone number:	***Armando Fernandez, Senior Civil Engineer, P.E.*** 714.647.3316
Project location:	The proposed City of Santa Ana Well No. 32 Rehabilitation Project ("Project") site is located in the City of Santa Ana, in the central portion of Orange County, within Township 4 South, Range 10 West (unsectioned), Township 5 South, Range 10 West, Section 1, on the Anaheim, California, U.S. Geological Survey 7.5-minute Quadrangle Map (1977). Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. A new proposed pipeline will discharge well water to the existing John Garthe Reservoir traversing North Westwood Avenue to West Memory Lane to North Bristol Street. See Figure 2-1, Project Vicinity Map.
Project sponsor's name and address:	**City of Santa Ana** **Public Works Agency** 220 S. Daisy Avenue Santa Ana, California 92703
General Plan Designation:	O (Open Space)
Zoning Designation:	O (Open Space)
Surrounding land uses:	Surrounding land uses primarily consist of residential uses, with additional though smaller areas of park, commercial, and place of worship uses. Nearby major cross streets are North Westwood Avenue to the west and West Memory Lane to the south. The Santa Ana river trail is located approximately 0.4 mile to the west. Interstate 5 is located approximately 0.35 mile to the east. State Route 22 is located approximately 0.25 mile to the north.

This page intentionally left blank

2.1 ENVIRONMENTAL SETTING

2.1.1 Regional

The City of Santa Ana (City) encompass 27.3 square miles in the west-central part of northern Orange County (City of Santa Ana 1998). See Figure 2-1, Project Vicinity Map. The Santa Ana River is the major drainage channel flowing through the City which diagonally traverses the western portions of the City running from the northeast to the southwest.

The City is surrounded by the incorporated cities of Garden Grove, Anaheim, Orange, Tustin, Irvine, Newport Beach, Costa Mesa, and Fountain Valley. Regional access to the City is provided by Interstate 5, which diagonally traverses the northeastern portions of the City running southeast-northwest, State Route 22, which generally forms the City's northern boundary; State Route 55, which generally forms the City's eastern boundary; Interstate 405, which runs southeast-northwest south of the City's southern boundary; and State Route 57, which travels north-south from the north side of the City. The City is also accessible from adjacent communities via major arterial surface streets.

Land uses in Santa Ana are characterized as a diverse collection of residential, commercial, light industrial, and public uses, including parks. As the seat for Orange County, the Civic Center area of Santa Ana contains Federal, State, and local governmental facilities including the courts, criminal justice facilities, administrative offices, and service centers (City of Santa Ana 1998).

2.1.2 Project Area

The Project area is located in a primarily residential area of the City, bounded by the Santa Ana River on the west, State Route 22 on the north, Interstate 5 on the east, and W. Santa Clara Avenue on the south. The City's Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. The proposed pipeline route, connecting the well to the existing John Garthe Reservoir, traverses North Westwood Avenue to West Memory Lane to North Bristol Street. See Figure 2-2, Project Location Map.

The existing Well No. 32 is located in Morrison Park. Morrison Park is bordered by North Westwood Avenue to the west, Corrigan Avenue on the north, Freeman Lane to the east and a parking lot/single family homes to the south. The park features a basketball court, tennis courts, baseball field, and two playground areas. The park currently has two 27-foot wide entrance/exit driveways along North Westwood Avenue into a parking lot.

2.1.3 Existing Well No. 32

The existing Well No. 32 is in a concrete vault below ground level, just south of the Morrison Park parking lot. See Figure 2-3, Well No. 32 Layout Plan. The existing well has a 300 horse-power (HP) vertical turbine pump and motor, which are located within a 28-foot long by 12-foot wide by 10-foot tall (inside dimensions) precast concrete vault. The vault access hatch includes a 3-foot by 8-foot access door and a 4-foot by 4-foot removable roof cover above the pump and motor. Within the vault, there are the following: access stairway with handrails; 300 HP motor; 12-inch/14-inch discharge piping including check valve, gate valves, and meter; 6-inch/10-inch flush piping including pressure relief valve and gate valves; sump pump and exhaust fan; and corresponding electrical and instrumentation facilities. The existing electrical control and motor control center equipment are aboveground on a concrete pad located south of the vault adjacent to the perimeter block wall.

2.2 PROJECT DESCRIPTION

2.2.1 General Description

The City of Santa Ana is proposing to rehabilitate existing Well No. 32 by removing the existing pump and installing a new one with a variable frequency drive to pump well water. The Project includes construction of approximately 3,250 linear feet of new pipeline to pump the well water to the existing John Garthe Reservoir. The project also includes a new above ground well pump building with an electrical room and a separate chemical facility building for on-site generation of sodium hypochlorite to disinfect well production waters. Appurtenant features include demolition of underground facilities, site improvements and landscaping.

The City encompasses 27.5 square miles and has a population of over 325,000 people. The City operates a water distribution system which includes more than 450 miles of water mains and over 44,000 water services. The City's potable water is obtained by using a combination of pumping from the Orange County Groundwater Basin using 21 existing groundwater wells and importing water via seven (7) Metropolitan Water District pipeline connections. The City has some wells that produce groundwater with elevated nitrate levels. The City has developed a Nitrate Blending Plan that mixes the high nitrate groundwater with low nitrate groundwater. One of the high nitrate wells is Well No. 32 and it has been inactive for over nine (9) years due to low operating efficiencies and high nitrate levels.

It is the City's goal to rehabilitate Well No. 32 and re-commission the well for service. Instead of treating the high nitrates at the well site and impacting Morrison Park, the City intends to incorporate Well No. 32 into its existing Nitrate Blending Plan. Water from Well No. 32 will be pumped to the John Garthe Reservoir site. At the John Garthe Reservoir site, the City blends low nitrate water from Well Nos. 36 and 39 (both located at the reservoir site) with higher nitrate water from Well Nos. 18, 24 and once reinstated, Well No. 32. By reinstating Well No. 32, the City can more effectively improve its water supply reliability and help ease the burden on the other water production distribution facilities.

2.2.2 Site Plan

As shown in Figure 2-4, Well No. 32 Site Plan, the proposed Well No. 32 site will include a well building with an electrical room (about 23 feet by 35 feet) and a chemical facility building (about 21 feet by 15 feet) with an adjacent emergency shower and eyewash area. For security, a 6-foot high wrought iron metal fence with a man-gate will be installed around the emergency shower and eyewash outside of the building. The chemical facility building is positioned between the tennis courts and the parking lot. To maintain current pedestrian access and meet Americans with Disabilities Act of 1990 requirements, the 7-foot wide concrete sidewalk between the tennis courts and the pavement access road to the parking lot will be shifted to the north.

The existing well is approximately 50 feet east of the North Westwood Avenue curb face and approximately 15 feet north of a property line to the neighboring church parking lot. We will also retain and use the existing Southern California Edison (SCE) transformer located in the southeast corner of the property. The location of the proposed well building is set by the existing well and clearance from the transformer. Although the new building will have a larger aboveground footprint than the existing vault structure, it is situated in a corner of the park between two parking lots and North Westwood Avenue where there is minimal potential usage.

2.2.3 Well No. 32 Rehabilitation

Before any demolition of the existing site can occur, the pump and motor will be pulled so the well can be rehabilitated. Figure 2-4 illustrates the conceptual layout of the necessary work area required to accommodate the well rehabilitation activities. These activities will include: cleaning

the wire-wrapped well screen; conducting video surveys to assess the effectiveness of the rehabilitation process; installing a temporary test pump and conduct pumping tests; performing a dynamic flowmeter (spinner) survey and depth-specific sampling downwell near the end of the constant rate pumping test; following completion of the tests, removing the test pump and perform a final video and static spinner surveys to determine the downwell, ambient flow regime under non-pumping conditions.

2.2.4 Existing Well No. 32 Facility Demolition

Once the rehabilitation is complete, portions of the Well No. 32 facility (the below-ground vault and contents) will be demolished and removed while other portions will be abandoned in place. Existing trees and boulders near the well site will be removed to provide a work area for the demolition and proposed construction. The existing 30-inch well casing pipe will be extended up beginning at the concrete well base (inside the vault) to just past the existing ground surface then covered for future well equipping. The vault's access hatch, riser, access stairs and handrails, concrete roof slab, and vault walls will be removed and disposed of properly. The concrete floor slab will be abandoned in place, with holes drilled through it to allow for adequate drainage. The existing waste to drain valve vault is in the sidewalk adjacent to the parking lot and will be removed and properly disposed along with the waste to drain valves, piping, and double leaf access hatch. The above ground chemical storage structure, electrical equipment and control panels, vent pipe and concrete pads will be removed and disposed of properly. During demolition, the existing SCE transformer, adjacent to N. Westwood Avenue and the 6-foot tall concrete masonry unit block wall, will be protected in place. Figure 2-5 show the limits of demolition.

2.2.5 Well Facility

The proposed well building will have three separate rooms, housing the well head and piping, electrical cabinets and SCE switchgear. The building will have reinforced, solid-grouted concrete masonry walls, a shallow concrete foundation, and a concrete floor slab-on-grade.

Well improvements will include the installation of a vertical turbine well pump with 2,500 gallons per minute (gpm) pumping rate and an above ground electrical 250 HP motor with variable frequency drive.

The mechanical layout for rehabilitated Well No. 32 consists of a new well base, well discharge piping, globe style check valve, motor operated butterfly valve for well start-up, magnetic flow meter, chemical injection tap, handwheel operated butterfly valve for isolation, well waste piping, pressure reducing/sustaining valve with insertion meter, and a double check backflow valve assembly.

The 12-inch discharge piping was based on a design flow of 2,000 gpm, with a maximum flow of 2,500 gpm. The well waste piping was based on a maximum flow of 2,500 gpm for well flushing (continuous flow). The piping for the well waste pressure reducing/sustaining valve will be sized to the diameter of the valve until it goes below ground where it will be upsized to 12-inch in diameter.

2.2.6 Chemical Facility

Water produced from Well No. 32 will be disinfected using sodium hypochlorite (NaOCl) before it is discharged into John Garthe Reservoir. The City has standardized the use of on-site generation at all of their well sites to produce a 0.8 percent solution of sodium hypochlorite for disinfection. The disinfection equipment will be housed in a chemical facility building, separate from the well building. It will have two rooms and will be made of concrete masonry block walls

to isolate the salt and brine storage areas from the sodium hypochlorite production and storage area.

An on-site generation system generates 0.8 percent sodium hypochlorite solution using salt, softened water and electricity. Additionally, the system components include a water softener, bulk storage tanks for the salt and NaOCl solution, metering pumps, a brine saturator, an electrolytic cell, and an electric rectifier.

The design layout of the chemical facilities is presented in Figure 2-6. The overall building footprint is approximately 310 square feet. The entrance to the sodium hypochlorite chemical room will be through an enclosed gated area with an exterior shower/eyewash station. A rollup door is provided to the right of the gated area for equipment access. The sodium hypochlorite room will include the electrical equipment, electrolytic cells, metering pumps and a 475-gallon sodium hypochlorite storage tank.

The salt/brine area of the building will be designed with a separate access door where personnel can enter the chemical production/storage area that will enclose a 150-gallon brine tank, water softener and salt storage pallet.

2.2.7 Morrison Park Access

A portion of Morrison Park, including part or all of the parking lot and the current well site area, will be fenced as the construction work area during construction. Figures 2-7 and 2-8 depict the possible work areas, including fencing around the perimeter. Figure 2-7 shows the minimum work area required to build the improvements with the southerly entrance/exit driveway closed during the interval.

There are a total of 25 stalls in the parking lot (13 stalls on the west and 12 stalls on the east), two of which are handicap accessible stalls on the east side. Based on the minimum work area and the space required for public parking, a total of 14 parking spots (seven on the west and seven on the east) will be out of commission and leave 11 spaces available (two of which are disabled stalls) during construction. The southerly driveway will be closed to park users for the construction period, but access will be available to and from the parking lot via the northerly driveway. Another option will be to close the parking lot entirely and have people park on the side streets to minimize the chance of public exposure to construction activities. Street parking can supplement the reduction in parking stalls.

No matter how much of the parking lot is temporarily used by the contractor, the public still have direct access to the park itself, including the basketball and tennis courts with minimal disruption.

2.2.8 Morrison Park Landscaping

Recently, the City of Santa Ana constructed low impact design landscaping in and around the park's parking lot, including stones and area drains within the row of mature trees in the parkway along N. Westwood Avenue. As part of this Project, the new well site will incorporate the same landscaping theme around the buildings and above ground facilities. This may include bioswales, drought tolerant plants, pervious pavement or pavers. Any proposed landscaping will allow easy maintenance and still provide access to and use of Morrison Park. The design will also include restoring any low impact design improvements damaged by the construction.

2.2.9 Storm Drain

The existing Well No. 32 Site currently conveys water waste discharge during well startup through a 10-inch double check valve assembly adjacent to the well and continues through a 12-inch polyvinyl chloride (PVC) drain pipe south on North Westwood Avenue, turns west on

Memory Lane and connects to an existing City storm drain catch basin, located on the northeast corner of the intersection at West Memory Lane and Bristol Street. The rehabilitated Well No. 32 will re-use the existing 12-inch PVC drain pipe to convey water waste discharge during well rehabilitation and well startup process. The proposed well waste discharge will be designed to 2,500 gpm resulting in a velocity of 7 feet per second within the existing 12-inch PVC pipe which is considered an acceptable velocity performing as a pressurized pipe

2.2.10 Project Pipeline

The rehabilitated Well No. 32 will pump groundwater to the John Garthe Reservoir. The proposed water pipeline will be 12-inches in diameter and composed of ductile iron.

The proposed pipeline will begin at Well No. 32 in Morrison Park and continue south along North Westwood Avenue, then bear west along West Memory Lane, and south onto the west side of Bristol Street. To reach a viable bay opening within the bridge deck, the alignment will cross the street to be on the east side of Bristol Street. As it crosses, the pipeline will cross six utilities, including a 2-inch gas line that was hung under the bridge deck, a fiber optic duct bank that was installed using jack-and bore construction under the channel, a 2-inch irrigation and electrical conduit hung under the bridge deck, an abandoned 6-inch sewer siphon, and the 34-inch MWD line constructed under the channel before turning to enter the bridge deck.

The pipeline will cross over Santiago Creek within a bay opening beneath the Bristol Street Bridge. This route will take advantage of an abandoned 18-inch water pipeline which is in one of the bays of the Bristol Street Bridge. The existing abandoned 18-inch water pipeline and pipe hangers will be removed and disposed in order to provide space to construct the proposed 12-inch water pipeline, fiber optic conduit, and new pipe hangers. On the south side of the Bristol Street Bridge, the pipeline will turn east and to connect to the existing John Garthe Reservoir through a 16-inch fill line. A fiber optic conduit will be installed within the same trench and alignment as the proposed pipeline from Well No. 32 to the existing control room on the John Garthe Reservoir site. The route of the proposed pipeline alignment is shown in Figure 2-9.

2.2.11 Reservoir Improvements

John Garthe Reservoir site consists of three reservoirs with a total of 16 million gallons of storage capacity and an additional set of wells (Nos. 18, 24, 36 and 39) and six booster pumps. The three reservoirs are connected by a network of piping that allows for the pumping of water from any combination of reservoirs. Well Nos. 24, 36 and 39 can fill any of the reservoirs while Well No. 18 can only fill the Phase 1 reservoir.

Instead of treating the high nitrates at Well No. 32 and impacting Morrison Park, the City intends to incorporate Well No. 32 into the City's Nitrate Blending Plan. Currently at the John Garthe Reservoir site, the City blends low nitrate water from Well Nos. 36 and 39 (both located at the reservoir site) with higher nitrate water from Well Nos. 18 and 24. The City is planning to pump groundwater with high nitrates from Well No. 32 to the John Garthe Reservoir and include this water into the Nitrate Blending Plan.

The Project will involve various improvements at John Garthe Reservoir in order to include Well No. 32 water into the Nitrate Blending Plan. These will include installing a new pressure reducing/sustaining valve, modifications to existing electrical/control facilities, and developing a data communication system between the well site and the reservoir.

2.2.12 Construction Details

Construction is anticipated to begin in the first quarter of 2020 and last approximately 14 months. Construction Best Management Practices (BMPs) will be used including those for stormwater, erosion/sediment control, and spill prevention.

The rehabilitation and development of Well No. 32 will occur in the following sequence:

1. Decommissioning of the existing well vault and removal of specified equipment;
2. Constructing the pipeline (may be done concurrently with well equipping);
3. Well equipping (installation of pump, motor, and fittings), and construction of electrical, and chemical storage structures to support Well No. 32;
4. Testing and commissioning of the rehabilitated well; and
5. Site cleanup and demobilization.

All staging and stockpiling will occur on-site within the work zones for well rehabilitation and equipping only. The pipeline contractor will be responsible for obtaining a temporary storage area.

Waste and excess debris will be hauled away for disposal.

Equipment and material will be hauled from the Site traveling south on North Westwood Avenue, west on West Memory Lane, north on South Bristol Street to the entrance of the 22 Freeway ramp.

Groundwater generated during well testing will be discharged to baker tanks, that will be located onsite and will later be disposed of as discharge to the storm drain.

Rehabilitation of the well and facilities and construction of the pipeline will include approximately 518 working days of construction during normal working days and hours (Monday through Friday, except federal holidays). This will include conducting final pumping tests, involving a 12-hour step-drawdown and a 24-hour (minimum) constant rate test. The construction labor force will vary from 10 to 30 workers for the duration.

The construction work area along the proposed pipeline will be approximately 24 feet wide. A traffic control plan will be prepared to accommodate this work area corridor along the pipeline route. The following paragraphs describe preliminary traffic control concepts for each of the main roadways within which the pipeline will be constructed.

North Westwood Avenue. A single travel lane will be provided for northbound traffic. Traffic in the southbound direction will be detoured along one of the adjacent local streets, or flaggers will be provided to keep traffic flowing in either direction. Ingress and egress access to both driveways open to the parking lot of the Pentecostal Church of God will be provided at all times. The egress access for The Westwood Condominiums, located on the northwest corner of North Westwood Avenue and West Memory Lane will be provided at all times.

West Memory Lane. A single travel lane will be provided but the bike lane headed eastbound will be closed during construction. The center two-way left turn lane will be shut down during construction to temporarily accommodate eastbound traffic. Eastbound bicycle traffic will have to be detoured. Street parking and westbound traffic for vehicles and bicycles will continue without interruption.

North Bristol Street. Traffic control during construction within North Bristol Street will be handled with slight differences in the following segments:

Between West Memory Lane and West Park Lane. A single travel lane will be provided for southbound traffic. All three northbound travel lanes and two left turn lanes will continue without interruption.

Between West Park Lane and the Bristol Street Bridge at Santiago Creek Channel. A single travel lane will be provided for southbound traffic. All three northbound travel lanes will continue without interruption.

2.2.13 Operations

Once operational, Well No. 32 can potentially pump up to 2,500 gpm of groundwater to the John Garthe Reservoir to be blended with low nitrate water from other wells as part of the City's Nitrate Blending Plan. The City will not need to pump an exact flow rate and changes in the flow due to groundwater level will be gradual and should not impact the Nitrate Blending Plan. During normal operation, the well is expected to operate 24 hours per day, 7 days a week.

The normal operation of the well will require one vehicle trip weekly for one worker to monitor the operation of the well facilities. Maintenance will require one bi-weekly vehicle trip. Periodic maintenance activities will include replacement of the salt pallets and testing and maintaining equipment. Inspections will be made by the City to ensure protection of the public health, safety, and general welfare.

The well will be shut down and restarted approximately two to three times per month for maintenance and testing.

Well operations will require electrical power be provided by SCE for the electric systems and motor. The City will monitor operation of the plant through the City's supervisory control and data acquisition system.

2.3 OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

Other public agencies whose approval is expected to be required in the form of permits, financing approval, or participation agreements are as follows:

- Santa Ana Regional Water Quality Control Board - National Pollutant Discharge Elimination System (NPDES) Permit for well rehabilitation; Storm Water Pollution Prevention Plan for construction activities and development discharge;
- Orange County Flood Control District – Discharge Permit;
- Orange County Fire Authority – Planning and Development Fire Service Permit;
- City of Santa Ana, Department of Public Works – Encroachment Permit;
- City of Santa Ana, Department of Planning and Building – Building, Electrical, Plumbing, Mechanical, Grading, and Police Permits; and
- City of Santa Ana, Department of Parks and Recreation – Planning and Development Fire Service Permit.

This page intentionally left blank

3.0 ENVIRONMENTAL CHECKLIST

3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked 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.

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

3.2 DETERMINATION: (TO BE COMPLETED BY THE 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.
- ☒ 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 (EIR) 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	10/15/19 Date	Signature	Date
ARMANDO FERNANDEZ Print Name		Print Name	

3.3 EVALUATION OF ENVIRONMENTAL IMPACTS

(1) A brief explanation is required for all answers except "no impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "no impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "no impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

(2) All answers must take account of the whole action involved, including off site as well as on site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

(3) Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially significant impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "potentially significant impact" entries when the determination is made, an EIR is required.

(4) "Negative declaration: less than significant with mitigation incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "potentially significant impact" to a "less than significant impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.

(5) Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063[c][3][D]). In this case, a brief discussion should identify the following:

   a. Earlier analysis used. Identify and state where earlier analyses are available for review.

   b. Impacts adequately addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c. Mitigation measures. For effects that are "less than significant with mitigation incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

(6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.

(7) Supporting information sources. A source list should be attached and other sources used or individuals contacted should be cited in the discussion.

(8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

(9) The explanation of each issue should identify:

a. The significance criteria or threshold, if any, used to evaluate each question, and

b. The mitigation measure identified, if any, to reduce the impact to a less than significant level.

This page intentionally left blank

3.4 ENVIRONMENTAL IMPACT ANALYSIS

3.4.1 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 along a 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 that would adversely affect daytime or nighttime views in the area?			X	

Existing Conditions:

The Project site is located in an urban setting characterized by views of primarily residential uses, with park, commercial, and place of worship uses. None of the scenic corridors identified in the City of Santa Ana's General Plan Scenic Corridors Element are near or within the viewshed of the Project site. The closest identified scenic corridor is the Sana Ana River (City of Santa Ana 1982a), which is within approximately 0.4 feet west of the site. However, due to intervening buildings, the viewshed of the Project site does not include the river.

According to the Caltrans Map of Designated Scenic Routes (Caltrans 2018), there are no official State-designated routes in the Project vicinity. State Route 1, an eligible State Scenic Highway, is located over 10 miles to the south. The Project site is not visible from State Route 1 due to distance and intervening structures and topography.

The well site is developed with an asphalt-paved drive way and parking area, and landscaping with ornamental vegetation, see Figure 3-1. Views of the site is limited to the surrounding residential, park, and places of worship uses and adjacent roadways.

Discussion:

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

No Impact.

The Project site does not contain a scenic vista. As discussed above, direct views of the Project site are from surrounding residential, place of worship and park uses and adjacent roadways.

The proposed Well No. 32 site will include a well building with an electrical room (about 23 feet by 35 feet) and a chemical facility building (about 21 feet by 15 feet) with an adjacent emergency shower and eyewash area. For security, a 6-foot high wrought iron metal fence with a man-gate will be installed around the emergency shower and eyewash outside of the building. The chemical facility building is positioned between the tennis courts and the parking lot. To maintain current pedestrian access and meet Americans with Disabilities Act of 1990 requirements, the 7-foot wide concrete sidewalk between the tennis courts and the pavement access road to the parking lot will be shifted to the north. See Figures 2-3 through 2-6.

Implementation of the proposed Project would not block any scenic views. In addition, the proposed Project will occupy approximately the same location as the existing well facilities and therefore views of this portion of the park would not change significantly. As the Project site does not contain any scenic vistas, and because the proposed Project will not block existing views of any scenic vista, implementation of the proposed Project would not impact views of any scenic vista. No impact will be experienced.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is not in the viewshed of any designated or eligible State scenic highway. No impact to a scenic highway will occur.

Mitigation Measures: No mitigation is required.

c. Would the project 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?

Less Than Significant Impact. The proposed Project would involve both temporary and permanent changes to the visual character of the site. Temporary changes are associated with construction activities, including construction equipment, staging, and Site construction. These visual impacts would be short-term in nature and are not considered to be significant.

Implementation of the proposed Project would result in long-term/permanent changes to the visual character of the site due to the replacement of the existing well facilities with a well building, an electrical room, and a chemical facility building. As part of this Project, the new well site will incorporate the same landscaping theme used around other park buildings and above ground facilities. This may include bioswales, drought tolerant plants, pervious pavement or pavers. While these buildings will be more prominent than existing facilities, they will be similar in nature and visual character.

While the proposed Project would result in a change to the existing visual character of the site, it would not result in the removal or degradation of any significant visual resources and would be consistent in character to the existing well facilities. For this reason, impacts are considered to be less than significant.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. There are two primary sources of light: light emanating from building interiors that pass through windows, and light from exterior sources (e.g., street lighting, parking lot lighting, building illumination, security lighting, and landscape lighting). Light

introduction can be a nuisance to adjacent uses and diminish the view of the clear night sky. Currently, light and glare in the Project vicinity is produced by vehicle headlights, street lighting, and lighting from the adjacent residential and place of worship uses.

The Project would not introduce additional night lighting or glare compared to the existing lighting around the Project site. Furthermore, since the structures would not include shiny finishes, the Project is not expected to create any daytime glare. Therefore, a less than significant impact from the standpoint of light and glare would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.2 AGRICULTURE AND FOREST RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:					
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on 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 conflict with a Williamson Act contract?				X
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)) or timberland (as defined in PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
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 that, 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

Existing Conditions:

The City of Santa Ana is predominately built-out with limited vacant land. On the Farmland Mapping and Monitoring Program Map for California (California Department of Conservation 2018), the Project site and the surrounding area is designated as Urban and Built-Up Land, which is generally described as land occupied by structures that has a variety of uses including residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

Discussion:

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

No Impact. According to the Farmland Mapping and Monitoring Program Map for California, the Project site is an area designated as Urban and Built-Up Land. No Prime or Unique Farmland, or Farmland of Statewide importance exists within the Project site or vicinity; therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is designated in the Santa Ana General Plan Land Use Plan as O (Open Space), and there are no agricultural zoning designations or agricultural uses within the Project limits or adjacent areas (City of Santa Ana 1998). The Project would not convert farmland or conflict with any land zoned for agriculture. No Williamson Act contracts apply to the Project site. Therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is zoned as O (Open Space). It is surrounded by land zoned as for residential uses. The proposed Project would not conflict with existing zoning, or cause rezoning of forest land or timberland resources. Therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

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

No Impact. There is no forest land in the vicinity of the Project site. Therefore, the proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

Mitigation Measures: No mitigation is required.

e. Would the project involve other changes in the existing environment that, due to their location or nature, could individually or cumulatively result in loss of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. There is no farmland or forest land located within or near the Project site. Therefore, the Project would not involve any changes that could result in the loss or conversion of farmland or forest land to other uses. No impact would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.3 AIR QUALITY

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:					
a.	Conflict with or obstruct implementation of the applicable air quality plan?				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 affecting a substantial number of people?			X	

Existing Conditions:

The Project site is located within the South Coast Air Basin (SoCAB or "Basin"), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties.

The California Air Resources Board tracks attainment of air quality standards (established by both U.S. Environmental Protection Agency and SCAQMD) for basins throughout the State. The SoCAB has been designated as a non-attainment area for ozone (O_3), fine particulate matter ($PM_{2.5}$), and inhalable particulate matter (PM_{10}) as it does not meet California Ambient Air Quality Standards for certain pollutants regulated under the Federal Clean Air Act. Conditions within the SoCAB fail to meet national standards for O_3 and $PM_{2.5}$ and therefore the SoCAB is considered to be a Federal "non-attainment" area for these pollutants. Table 3-1 lists criteria air pollutants and their current attainment status in the SoCAB.

Table 3-1. Criteria Pollutants Attainment Status in the South Coast Air Basin

Air Pollutants	State	Federal
O_3 (1-hour)	Nonattainment	Extreme Nonattainment
O_3 (8-hour)	Nonattainment	Extreme Nonattainment
$PM_{2.5}$	Nonattainment	Serious Nonattainment
PM_{10}	Nonattainment	Attainment/Maintenance
NO_2	Attainment	Attainment/Maintenance
CO	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment

Air Pollutants	State	Federal
Lead	Attainment	Attainment
Particulate Sulfate	Attainment	Attainment
Hydrogen Sulfide	Unclassified	Attainment
Visibility Reducing Particles	Unclassified	Attainment
CO – carbon monoxide; NO_2 – nitrogen dioxide; O_3 – ozone; PM_{10} – inhalable particulate matter; $PM_{2.5}$ – fine particulate matter; SO_2 – sulfur dioxide. Source: SCAQMD 2017.		

Table 3-2 lists criteria air pollutant de minimis levels based on Federal attainment status.

Table 3-2. Federal Attainment Status/De Minimis Levels

Pollutant	Area Type	Tons/Year
O_3 (VOC or NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
O_3 (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
O_3 (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
CO, SO_2 and NO_2	All nonattainment & maintenance	100
PM_{10} and $PM_{2.5}$	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
Lead	All nonattainment & maintenance	25
CO – carbon monoxide; NO_2 – nitrogen dioxide; NO_x – nitrogen oxide; O_3 – ozone; PM_{10} – inhalable particulate matter; $PM_{2.5}$ – fine particulate matter; SO_2 – sulfur dioxide; VOC – volatile organic compounds. Source: US EPA 2019.		

Discussion:

a. Would the project conflict with or obstruct implementation of the applicable air quality plans?

No impact. The applicable plans considered here are (1) the Air Quality Management Plan (AQMP) prepared by the SCAQMD, and (2) the Regional Comprehensive Plan and Guide (RCPG) prepared by the Southern California Association of Governments (SCAG). The former directly affects air quality through specific management strategies for pollutant emissions, while the latter indirectly affects air quality by providing recommendations for the management of land development and transportation.

The Clean Air Act requires the SCAQMD to reduce emissions of certain pollutants for which the basin is in non-attainment (i.e. ozone, PM_{10}, and $PM_{2.5}$). The Project would be subject to the SCAQMD's AQMP. The AQMP contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies

are developed, in part, based on regional population, housing, and employment projections prepared by SCAG.

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development and the environment. SCAG serves as the federally designated metropolitan planning organization for the southern California region. With regard to air quality planning, the RCPG includes Growth Management and Regional Mobility chapters that form the basis for the land use and transportation control portions of the AQMP. RCPG projections are used in the preparation of air quality forecasts and consistency analysis included in the AQMP. Both the RCPG and AQMP strategy incorporate projections from local planning documents.

The Project will be consistent with the AQMP, which is primarily concerned with long-term influence on air quality in the Basin. Neither the implementation of the Project nor its operation would result in long-term regional impacts. The Project would comply with SCAQMD Rule 403 and would implement all feasible mitigation measures for control of PM_{10} and $PM_{2.5}$; the Project would be consistent with the goals and policies of the AQMP for control of fugitive dust. In addition, because the proposed Project would not result in a change in dwelling units or occupants or activities (and therefore not alter RCPG projections), it is not in conflict with the AQMP restrictions relative to land use and transportation. The Project's long-term influence would also be consistent with the goals and policies of the AQMP and the RCPG and is, therefore, considered consistent with the SCAQMD's and SCAG's plans.

Mitigation Measures: No mitigation is required.

b. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction Impacts

Less Than Significant Impact with Mitigation Incorporated. SCAQMD has established daily significance thresholds and the U.S. Environmental Protection Agency has established annual De Minimis Levels to address pollution sources associated with general construction activities (e.g., the operation of on-site construction equipment, fugitive dust from site disturbance activities, and travel by construction workers).

Short-term air quality impacts would occur during construction of the Project site. Three major sources of emissions during construction include the following:

- *Fugitive dust emissions* – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;
- *Construction Equipment* – Construction requires using heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- *Vehicles* – This category includes transport vehicles travelling to and from the site, such as delivery trucks hauling materials and automobiles carrying workers, generating exhaust emissions.

The SCAQMD has implemented a methodology for estimating localized air quality impacts from construction emissions using localized significance thresholds (LSTs). The LSTs are allowable emissions (pounds per day [lbs/day]) for criteria pollutants NO_X, CO, PM_{10} and $PM_{2.5}$, and vary based on source receptor area, minimum receptor-source distance, and maximum daily

disturbed acreage. The Project is located within source receptor area 17 Central Orange County. The LST look-up tables allow for a minimum receptor-source distance of 82 feet (25 meters). Since construction will periodically occur near residences, localized on-site emissions were assessed at this minimum distance (82 feet or 25 meters) for all construction and operation activities for a two-acre maximum daily disturbed area.

Proposed Project construction emissions were calculated using the California Emissions Estimator Model® (CalEEMod) emissions inventory model, originally developed by the California Air Resources Board. The analysis assumed that construction activities would comply with applicable portions of SCAQMD Rule 403 regarding the control of fugitive dust. The onsite construction emissions are compared with LSTs and summarized in Table 3-3. The CalEEMod model runs, which estimate the construction emissions in detail, are presented in Appendix A.

Table 3-3. Localized Significance Analysis[a]

Activity		Maximum Daily Onsite Emissions (lbs/day)			
		NO_x	**CO**	**PM_{10}[b]**	**$PM_{2.5}$**
Construction					
2020	Unmitigated	58	45	7.5	5.3
	Mitigated	58	45	4.7	3.8
2021	Unmitigated	23	22	1.2	1.1
	Mitigated	23	22	1.2	1.1
Localized Significance Threshold (lbs/day)		**115**	**715**	**6**	**4**
Exceed Localized Significance Threshold?		*No*	*No*	*No*	*No*
Operation					
Area and Off-road Sources		5.2	6.1	< 1	< 1
Localized Significance Threshold (lbs/day)		**115**	**715**	**2**	**1**
Exceed Localized Significance Threshold?		*No*	*No*	*No*	*No*

a. Compiled using the CalEEMod emissions inventory model, provided in Appendix A.
b. PM_{10} emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

The data provided in Table 3-3 shows that unmitigated construction-related PM_{10} and $PM_{2.5}$ would exceed local emissions thresholds, while all other analyzed pollutants would be within the thresholds. This would result in a significant impact. Mitigation measures based on SCAQMD Rule 403, and detailed below, would be applied and would reduce the Project's PM_{10} and $PM_{2.5}$ levels to below local emissions thresholds. Therefore, with implementation of mitigation measures, the construction-related local criteria pollutant impacts would be mitigated to less than significant levels.

With mitigation, the Project would result in emissions that do not exceed the LSTs for NO_x, CO, PM_{10} or $PM_{2.5}$. Therefore, the emissions would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Operational Impacts

Less Than Significant Impact. During the period of operation, the rehabilitated Well No. 32 will pump groundwater to the John Garthe Reservoir at a maximum flow rate of approximately 2,500 gpm. To accommodate this maximum flow, a pump with a 250 HP motor would be required. Water produced from the well will be disinfected using NaOCl before it is discharged to the John

Garthe Reservoir. It is anticipated that a maximum of 138 kilowatt hours (kWh) of electricity per day will be required for disinfection procedures. The electricity used for pumping groundwater and applying NaOCl would be generated off-site site and is therefore classified as indirect emissions.

The typical maintenance of the well will require one vehicle trip monthly for one worker to monitor the operation of the well facilities. Maintenance and tank filling will require one quarterly vehicle trip. Periodic maintenance activities will include replacement of the sodium hypochlorite tank and testing and maintaining equipment. Inspections will be made by the City to ensure protection of the public health, safety, and general welfare. In total, the well would be visited by staff no more than 20 times per year. The pipeline would not require regular visits to the site. Emissions associated with maintenance of the well were calculated using CalEEMod. The onsite operational emissions are compared with LSTs and summarized above in Table 3-3. The CalEEMod model output is presented in Appendix A.

Mitigation Measure:

AIR-1: The Project will be required to comply with regional rules that assist in reducing air pollutant emissions. SCAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus PM_{10} and $PM_{2.5}$). Compliance with these rules will reduce impacts on nearby sensitive receptors. Standard requirements and Best Management Practices include the following:

- Equipment/vehicles shall not be left idling for periods in excess of five minutes.
- Engines shall be maintained in good working order to reduce emissions.
- Onsite electrical power connections shall be made available where feasible.
- Low-sulfur diesel fuel shall be utilized.
- Electric and gasoline powered equipment shall be substituted for diesel powered equipment where feasible.
- Exposed soils and haul roads shall be watered up to three (3) times per day to reduce fugitive dust during grading/construction activities, if necessary.
- Street sweeping shall be conducted when visible soil accumulations occur along site access roadways to remove dirt dropped by construction vehicles.
- Site access driveways and adjacent streets shall be washed daily, if there are visible signs of any dirt track-out at the conclusion of any workday.
- Construction vehicle tires shall be cleaned prior to leaving the Project site.
- All trucks hauling dirt away from the site shall be covered, and speeds on unpaved roads shall be reduced below 15 miles per hour.
- During high wind conditions (i.e., sustained wind speeds exceeding 20 miles per hour), areas with disturbed soil shall be watered hourly and activities on unpaved surfaces shall cease until wind speeds no longer exceed 20 miles per hour.
- Storage piles that are to be left in place for more than three working days shall either be sprayed with a non-toxic soil binder, covered with plastic or revegetated.

c. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact. The proposed Project results in an increase in short-term emissions related to construction and long-term operational emissions for the pollutants and precursors for which the SoCAB is in nonattainment (O_3, PM_{10}, and $PM_{2.5}$). Although the Project site is located in a region that is in nonattainment for O_3, PM_{10}, and $PM_{2.5}$, the cumulative emissions associated with the Project would not be considerable because the emissions fall below SCAQMD thresholds. Under this condition, the Project would not make a cumulatively considerable contribution during construction and operation. Therefore, impacts would be less than significant.

Construction and operational emissions for the proposed Project are presented in Table 3-4, using conservative assumptions which imply a conservative equipment mix and a worst-case construction schedule (detailed in Appendix A). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions. Construction emissions include operation of on-site construction equipment, fugitive dust from site disturbance activities, and travel by construction workers during construction. Operational emissions include off-road equipment used for maintenance activities (e.g. air compressors and generators), solvents such as cleaning supplies and aerosols, and landscape equipment. The CalEEMod model runs, which estimate the construction and operational emissions in detail, are presented in Appendix A.

Table 3-4. Regional Significance Analysis[a]

	ROG	NOx	CO	SOx	PM_{10}[b]	$PM_{2.5}$
Daily Regional Emissions (lbs/day)						
Construction						
2020	6.4	58	47	> 1	8.3	5.5
2021	3.4	31	33	> 1	1.9	1.7
SCAQMD Regional Significance Threshold (lbs/day)	**75**	**100**	**550**	**150**	**150**	**55**
Exceed Regional Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*
Operation						
Area & Off-road Sources	> 1	5.2	6.1	> 1	> 1	> 1
SCAQMD Regional Significance Threshold (lbs/day)	***55***	***55***	***550***	***150***	***150***	***55***
Exceed Regional Significance Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

a. Compiled using the CalEEMod emissions inventory model, provided in Appendix A.
b. PM_{10} emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

The incremental increase in regional emissions from Project activities would fall below SCAQMD significance thresholds. The Project will not result in the violation of air quality standards or contribute substantially to an existing or projected air quality violation. A less than significant construction impact is anticipated.

Mitigation Measures: No mitigation is required.

d. Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The Project involves construction of well facilities and a pipeline, during which time nearby sensitive receptors could potentially be affected. The closest residence to the construction footprint is approximately 10 feet. The SCAQMD LST look-up tables at a minimum receptor-source distance of 25 meters (82 feet) were used for Source Receptor Area 17 Central Orange County for a two-acre site. As described in the response to 3.4.3.b. previously, construction and operation of the Project would not result in emissions of criteria pollutants in excess of established thresholds. Because emissions of toxic air contaminants from diesel-powered construction equipment are expected to be minimal, intermittent, and of short duration, the Project is not expected to substantially increase ambient concentrations of toxic air contaminants regionally or locally. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations. As such, localized impacts to off-site sensitive receptors would be less than significant.

Mitigation Measures: No mitigation is required.

e. Would the project create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. During Project-related construction activities, various diesel-powered vehicles and equipment could create minor odors. These odors are not likely to be noticeable beyond the immediate vicinity and would be temporary and short-lived due to rapid dissipation. Construction odor impacts would be less than significant. No long-term odor impacts would occur with Project implementation.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.4 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, or 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, marshes, vernal pools, coastal wetlands, 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

Existing Conditions:

Regional and Local Plans

The Project site is not located within or near a Habitat Conservation Plan area or a Natural Community Conservation Plan area (County of Orange 2012).

According to the City of Santa Ana General Plan Conservation Element, is a built-up, urban community with limited natural habitat and wildlife resources (City of Santa Ana 1982b).

The Project area is highly urbanized and is an area that has been heavily modified by humans, including roadways, existing buildings, and landscaping with ornamental vegetation. Because of the high degree of disturbance in these areas, they generally have low habitat value for wildlife; wildlife found here are adapted to living in heavily urbanized areas.

City Tree Ordinance

Article VII (Regulation of the Planting, Maintenance, and Removal of Trees), establishes policies, regulations and standards necessary to ensure that the city will continue to realize the benefits provided by its urban forest. Section 33-188 of Article VII, states that:

"Site plan review shall require the planting of street trees to coincide with the development, redevelopment, renovating of any tract or parcel. The site plan for development or improvement of any tract or parcel of land shall be evaluated and approved by the city's transportation and development services division and street maintenance division for the placement of street trees by the developer in accordance with SAMC sections 33-47 through 33-53 and section 34-81. The approved site plan, in addition to the usual requirements of the zoning code, contained in chapter 41 of this Code, shall show the approximate location, size, and species of all existing trees to be maintained, trees to be removed and trees required for approval of the project."

Wetlands/Riparian Habitat

The U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS 2019) was reviewed for potential wetlands and riparian habitat in the vicinity of the Project site. No wetlands or riparian areas are mapped in or near the Project site. The closest resources are the Santa Ana river, located approximately 0.4 mile to the west of the Project site and Santiago Creek, located approximately 0.3 mile to the south of the Project site.

Project Site

The Project site will be developed within or adjacent to the existing well facilities, and is surrounded by park, residential, and place of worship uses. Several large mature trees are located on and near the well site. No wetlands or riparian habitat occur on or in the vicinity of the Project site.

Discussion:

a. Would the project have a substantial adverse impact, 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 the U.S. Fish and Wildlife Service?

No Impact. The Project site is already developed for an existing well facility and surrounded by park, residential, and place of worship uses. The Project site does not contain any sensitive habitat or wildlife resources. Therefore, the Project will result in no impact to biological resources.

Mitigation Measures: No mitigation is required.

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

No Impact. There are no riparian habitats or sensitive natural communities present on or near the Project site. No impacts would occur to riparian habitats or sensitive natural communities.

Mitigation Measures: No mitigation is required.

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

No Impact. There are no wetlands, marshes, or vernal pools within or in the vicinity of the Project Site. Therefore, no impact would occur to any federally protected wetlands under the Clean Water Act.

Mitigation Measures: No mitigation is required.

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

Less Than Significant With Mitigation Incorporated. With no native habitat, and no wildlife corridors that traverse the Project site, implementation of the proposed Project is not anticipated to interfere with the movement of native animals of any kind, or to impede the use of any native wildlife nursery sites. The closest resources are the Santa Ana river, located approximately 0.4 mile to the west of the Project site and Santiago Creek, located approximately 0.3 mile to the south of the Project site. These are both separated from the site by urban development.

The Project site supports trees that could potentially provide cover, forage, and nesting habitats for bird species that have adapted to urban areas, such as rock pigeons (*Columba livia*) or mourning doves (*Zenaida macroura*). Mourning doves are protected by the Migratory Bird Treaty Act and certain Fish and Game Codes. The statutes make it unlawful to take native breeding birds, and their nests, eggs, and young. Implementation of mitigation measure BIO-1, provided in the event that any nesting birds are found at the Project site location during construction, will reduce impacts to less than significant.

Mitigation Measures:

BIO-1*: Nesting Birds* – Project activities that will remove or disturb potential nest sites will be scheduled outside the breeding bird season. The breeding bird nesting season typically extends from February 15 through September 15.

If Project activities cannot be avoided during February 15 through September 15, a qualified biologist will conduct a pre-construction breeding bird survey for breeding birds and active nests or potential nesting sites within the limits of Project disturbance. The survey will be conducted at least seven days prior to the onset of scheduled activities, such as mobilization and staging. It will end no more than three days prior to vegetation, substrate, and structure removal and/or disturbance.

If no breeding birds or active nests are observed during the pre-construction survey or they are observed and will not be impacted, Project activities may begin and no further mitigation will be required.

If a breeding bird territory or an active bird nest is located during the pre-construction survey and will potentially be impacted, the site will be mapped on engineering drawings and a no-activity buffer zone will be marked (fencing, stakes, flagging, orange snow fencing, etc.) a minimum of 100 feet in all directions or 500 feet in all directions for listed bird species and all raptors. The biologist will determine the appropriate buffer size based on the type of activities planned near the nest and the type of bird that created the nest. Some bird species are more tolerant than others of noise and activities occurring near their nest. This no-activity buffer zone will not be disturbed until a qualified biologist has determined that the nest is inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by Project activities. Periodic monitoring by a biologist will

be performed to determine when nesting is complete. Once the nesting cycle has finished, Project activities may begin within the buffer zone.

If listed bird species are observed within the Project site during the pre-construction survey, the biologist will immediately map the area and notify the appropriate resource agency to determine suitable protection measures and/or mitigation measures and to determine if additional surveys or focused protocol surveys are necessary. Project activities may begin within the area only when concurrence is received from the appropriate resource agency.

Birds or their active nests will not be disturbed, captured, handled or moved. Active nests cannot be removed or disturbed; however, nests can be removed or disturbed if determined inactive by a qualified biologist.

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

Less than Significant Impact. The proposed Project would require the removal of two trees. See Figure 2-5. Each of these trees will be replaced with a 24-inch box tree (at a minimum), the species and new location to be determined by the City. Also, as part of this Project, the new well site will incorporate the same landscaping theme used elsewhere in the park around the new buildings and above-ground facilities. This may include bioswales, drought tolerant plants, pervious pavement or pavers. The proposed Project would not conflict with any local policies protecting biological resources and no impact would occur.

Mitigation Measures: No mitigation is required.

f. Would the project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or any other approved local, regional, or state habitat conservation plan?

No Impact. The Project site is not located within a Habitat Conservation Plan area, a Natural Community Conservation Plan area, or in any other local, regional, or State habitat conservation plan areas. Therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

3.4.5 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 in Section 15064.5?			X	
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X		
c.	Disturb any human remains, including those interred outside of formal cemeteries?			X	

A historic evaluation and records search was conducted by Tetra Tech and is provided under Appendix B. The following summarizes the results and conclusions.

Existing Conditions:

Section 15064.5(a) of the CEQA Guidelines generally defines a historical resource as one that is (a) listed in, or eligible for listing in, the California Register of Historical Resources, (b) listed in a local register of historical resources, (c) identified as significant in a historical resource survey (meeting the requirements of Section 5024.1(g) of the Public Resources Code), or (d) determined to be a historical resource by a project's lead agency. Historic, cultural, and paleontological resources include historic buildings, structures, artifacts, sites, and districts of historic, architectural, archaeological, or paleontological significance.

The prehistory of the southern California region has been summarized within four major horizons or cultural periods: Horizon 1 - Early Period (12,000 to 7,500 years before present (BP)), Horizon II - Millingstone Horizon (7,500 to 4,000 BP), Horizon III - Intermediate Cultures (3,000 to 1,000 BP), and Horizon IV - Late Prehistoric (1,000 BP to European historic contact). At the time of historic contact, the modern-day region of Orange County was home to the Gabrieliño (Tongva) people. European settlement began in 1771, when Spanish missionaries began to settle along the California coast and adjacent inland areas. Following the Mexican-American War and secularization of the nearby missions in 1834, the region was transferred to private landowners (ranchos) who established a primary economy of cattle ranching. Specifically, in the Project area Rancho Santiago de Santa Ana. After the fall of the rancho system, European settlers such as Jacob Ross, Sr., purchased substantial land holdings in the area. The economy included large-scale farming and fruit orchards and ranching. In the late 1860s, William Spurgeon purchased just under 100 acres of land that would become Santa Ana.

Santa Ana was founded in 1869 by William Spurgeon (City of Santa Ana 1982b). The original town, laid out by Mr. Spurgeon, consisted of 24 blocks. The town served as a shopping center and post office for surrounding agricultural areas. In 1878 the Southern Pacific Railroad arrived, and the Santa Fe Railroad followed in 1886. This encouraged development of the City. In 1889 the Orange County seat was located in Santa Ana and this further stimulated the development of businesses, stores, financial institutions and hotels serving the metropolitan population. Citrus and walnut farms were still plentiful and buying and selling land became the number one enterprise. Many of the structures in downtown and the surrounding bungalow homes were built

in the early 1900s and 1920s. Today the City is developed with urban uses and limited vacant land.

The town's water supply also began with Mr. Spurgeon. In 1869, his artesian well and small water tower supplied the residents' water. Today, from the U.S. Interstate-5 Freeway, a high Santa Ana water tower can be seen. It holds very little water and today is mainly a landmark. Now 30 percent of the city's water supply is stored underground; since 1928 the other seventy percent is a blend of California Aqueduct water and Colorado River water supplied by the Metropolitan Water District of Southern California (MWD).

To tap into water sources from outside the area, the City joined with 12 other southern California cities to form and be an original member agency of the MWD on February 27, 1931. MWD, as a regional wholesaler, supplies imported water to Southern California from the Colorado River and from the State Water Project from Northern California.

MWD's primary purpose is to develop, store and distribute water at wholesale rates to its member public agencies for domestic and municipal uses. In 1933, the Orange County Water District (OCWD) was formed by a special act of the State Legislature to manage Orange County's groundwater supply and protection of the County's rights to water in the Santa Ana River. In 1954, the City of Santa Ana became a member of OCWD.

The construction of the water main in 1954 coincides with the beginning of the City's OCWD membership and likely reflects broader efforts of the OCWD to increase distribution of local well water of the Lower Santa Ana Groundwater Basin to meet the demands of post-war suburban residential and industrial expansion. The existing, but abandoned, cast iron pipeline which runs south along N. Bristol Street for at least 1,000 feet before reaching the Santiago Creek crossing was also constructed in 1954. At the Bristol Street bridge over Santiago Creek, the main, which has been buried the distance north of the bridge, runs aboveground, affixed to the underside of the Bristol Street Bridge for a distance of approximately 95 feet. The main then returns below ground south of the bridge.

When the Bristol Street bridge was widened in 2002, the original 1954-constructed 18-inch pipe was left in place at its original location under the bridge. A new 24-inch pipeline within the newly widened part of the bridge was constructed and put into use while the 18-inch pipeline was abandoned in place.

Well No. 32 was constructed circa 1984 and is located on N. Westwood Avenue between Morrison Park and Spurgeon United Methodist Church. Well 32 has been inactive since 2004 due to low operating efficiencies and high nitrate levels.

According to the County of Orange General Plan (County of Orange 2012), sub-surface resources such as archaeological and paleontological sites are abundant in South Orange County, along the coast and in creek areas. Based on the County of Orange General Plan (2012), the Project Site is not located in areas mapped for archaeological sensitivity or historical areas.

The Project area of potential impact (API) includes the horizontal and vertical areas of ground disturbance. The direct horizontal API consists of the footprint of the well rehabilitation and pipeline installation (see Figures 2-4 and 2-9), the direct vertical API consists of an approximate maximum 16 feet deep for the well site and approximately 3.5 to 16 feet deep for the pipeline.

Focusing the discussion of existing conditions for cultural resources in specific reference to the Project Site, the Site and surrounding area is developed land that has been permanently altered due to the construction of below and aboveground improvements including streets, sidewalks, buildings, and utilities. The surficial deposits within the API have been subjected to previous ground disturbance. The geotechnical study for the Project identified 5 feet of artificial fill that

underlie the paved areas across the site (Leighton 2019). Underlying the artificial fill is Quaternary-aged young alluvial fan deposits (Qyf) to at least 31 ½ feet.

The Well No. 32 site is currently improved with the existing well facilities, parking lot, and surrounding park uses.

Record Search Results

A records search was conducted of the Project's API and surrounding areas via the South Central Coastal Information Center (SCCIC) of the California Historical Resources Information System on March 26, 2019 (SCCIC File No.200029.6046). For the records search, the study area included a half mile buffer centered on the API. As part of this records search, the SCCIC database of survey reports and overviews was consulted, as well as documented cultural resources, cultural landscapes, and ethnic resources. Additionally, the search included a review of the following publications and lists: California Office of Historic Preservation Historic Properties Directory, National Register of Historic Places, Office of Historic Preservation Archaeological Determinations of Eligibility, California Inventory of Historical Resources/California Register of Historic Resources (CRHR), California Points of Historical Interest, California Historical Landmarks, and local historic resource inventories. See Appendix B for record search results.

Seven previously conducted surveys (OR-00778, OR-00801, OR-00846, OR-01971, OR-02273, OR-03281, OR-04085) are within the API. An additional 18 previous studies have been conducted within a half mile of the API between 1975 and 2012. These cultural resource investigations are comprised of archaeological and architectural surveys, and literature searches.

Based on the SCCIC record search results, no CRHR or National Register of Historic Places listed or eligible sites were identified within the API. One previously recorded historic building (P-30-161827: Smiley House, a c. 1911 single family residence) was identified within a half mile of the API. P-30-161827 was determined eligible for listing to the CRHR and the -161827: National Register of Historic Places. This historic resource is over a quarter mile from the API.

Review of Historic Aerial Photographs

Review of historic aerial photographs and maps provides information regarding potential unrecorded historic features or sites within the API. Based on the aerial map review[1], the API was undeveloped agricultural land in 1952. By 1963, the API appears with paved major roads and freeways, primarily agricultural land in the northern Project area (e.g. Morrison Park) and residential subdivisions to the south. By 1972, the Project area appears in its current configuration with roads, residential subdivisions, and Morrison Park. Review of historic topographical maps from 1896 to 1901 illustrate the Project API as undeveloped and a railroad and a few roads in place in the surrounding area. The 1942 and 1949 maps illustrate major roads in the Project and surrounding area (e.g. Bristol Street). By 1963, residential subdivisions are present, similar to those present today. A search of federal land patents through the Bureau of Land Management's General Land Office Records website identified several early patent holders for the Project areas by several individuals between 1869 and 1883, three by means of Spanish-Mexican land grants and one by means of indemnity agreement.

Native American Heritage Commission Sacred Lands Files Search

Tetra Tech, Inc. contacted the California Native American Heritage Commission (NAHC) on March 1, 2019 and requested that the NAHC review its Sacred Lands Files. The NAHC replied

[1] Historic Aerials by Netronline 2018. Electronic database located at https://www.historicaerials.com/viewer accessed 9/23/2018.

on March 8, 2019 that results were negative for Native American Native tribal resources within the API and provided a list of local Native American contacts with knowledge of the Project area. The NAHC recommends conducting outreach to the listed tribes or individuals as they may have knowledge of cultural resources within or near the Project area. Native American consultation is part of the lead CEQA agency's responsibilities under Assembly Bill (AB) 52, and CEQA as discussed under Section 3.4.18, Tribal Cultural Resources.

No CRHR eligible or previously recorded resources were identified within the Project API.

Discussion:

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines §15064.5?

Less than Significant Impact. Section 15064.5 of the CEQA Guidelines specifically defines a "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or determined eligible for listing in, the California Register of Historical Resources; or
- A resource listed in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code (PRC); or
- Identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC; or
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California that may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (PRC, § 5024.1, Title 14 California Code of Regulation, Section 4852) including the following:

- An association with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- An association with the lives of persons important to local, California, or national history.
- An embodiment of the distinctive characteristics of a type, period, region, or method of construction, or a representation of the work of a master, or possesses high artistic values.
- A resource that has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

The existing well 32 and associated storage vault (chemical, electrical) were constructed in the 1980s and are under 45 years of age. As of the date of this document, the well and vault/storage are not considered historic resources under CEQA.

The 18-inch cast iron water main which is abandoned, but is present below the Bristol Street Bridge, was built in 1954. An evaluation was undertaken to determine if the water main is a historic resource under CEQA.

In order for a resource to be listed in the CRHR and NRHP, at least one significance criterion from 1 through 4 and A through D (respectively) must be met. The pipeline is evaluated below.

Under Criterion A, the pipeline is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local level. It was constructed in the mid-1950s with the beginning of the City's OCWD membership the broader efforts of the OCWD to increase distribution of local well water of the Lower Santa Ana Groundwater Basin to meet the demands of post-war suburban residential and industrial expansion. While increasing distribution of water to meet a growing population is important, most water mains and pipelines are constructed to distribute water to the communities they serve, and the available historic records do not indicate that this water main is importantly associated with this trend in Santa Ana history and it is currently not in use. Therefore, it is recommended not eligible for listing in the CRHR under Criterion 1 nor the NRHP under Criterion A.

Under Criterion B, the available historical records do not indicate that the pipeline is associated with the life of a person or persons important to our history at the state, local, or national level. The available historical data did not show that individuals associated with the pipeline have made significant contributions in his or her profession or group. It is therefore recommended not eligible for listing in the CRHR under Criterion 2 nor the NRHP under Criterion B.

Under Criterion C, the pipeline is not significant for its type, period, or method of construction nor was it the work of a master. It is a simple 18-inch cast iron pipe used to transfer water over hundreds of feet. Its materials, construction, and engineering characteristics are common for pipelines constructed during the mid-twentieth century and similar examples of these ordinary pipelines are found throughout the region. The portion that is located under Bristol Street bridge has been abandoned in place and a larger pipe was put in place in 2002 to replace the functionality of the older pipe. It is recommended not eligible for listing in the CRHR under Criterion 3 nor the NRHP under Criterion C.

Under Criterion D, in rare instances, structures can serve as sources of valuable information about historic construction materials or technologies and be significant under Criterion D. The pipeline does not appear to be a principal source of important information in this regard and is recommended not eligible for listing in the CRHR under Criterion 4 nor the NRHP under Criterion D.

The water main has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and it does not meet the significance criteria as outlined in those guidelines. Therefore, it is not a historic resource under CEQA. The pipeline does not meet the criteria for listing in the National Register of Historic Places (NRHP) in accordance with 36 *Code of Federal Regulations* (CFR) Part 800 of the National Historic Preservation Act of 1966, as amended.

The proposed Project would not cause a substantial adverse change in the significance of a historical resource defined in Section 15064.5 of the CEQA guidelines. The Project Site and immediate vicinity do not contain any known historic resources. Therefore, the proposed Project would not cause a substantial adverse change in the significance of an historical resource and no Project impact would result.

Mitigation Measures: No mitigation is required.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines §15064.5?

Less Than Significant with Mitigation Incorporated. The Project Site is not located in an area of archaeological resources sensitivity (County of Orange 2012). The SCCIC record search did not identify any previously recorded archaeological resources within the Project site or within

a half mile. Although the Project area is relatively densely developed, very few previous archaeological studies have been conducted throughout the region. The surficial deposits within the API have been subjected to previous ground disturbance. As noted above, geotechnical studies determine the API has approximately 5 feet of fill material overlaying alluvial fan deposits (Leighton 2019). Due to the lack of natural ground surface visibility, an archaeological survey was not conducted for the Project. The Project area is within the southern end of the broad Coastal Plain of Orange County. Sediments within the API consist of Holocene and Pleistocene alluvial fan deposits. Late Pleistocene and Holocene deposits are generally considered more likely to contain prehistoric deposits. If construction ground disturbance depths range within native soils (approximately 5 feet in depth and beyond), there would be a potential to impact previously unrecorded subsurface archaeological resources. With Mitigation Measure CUL-1 through CUL-3 incorporated, a less then significant impact is anticipated.

Mitigation Measures:

CUL-1: *Environmental Training* – prior to construction of the Project, a qualified archaeologist will provide a cultural resource briefing that includes all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction, and procedures to follow in the event an inadvertent discovery (Inadvertent Discovery Plan) is encountered, including appropriate treatment and respectful behavior of a discovery (e.g., no posting to social media or photographs). If requested, a local tribal representative(s) shall be invited to participate in the environmental training to discuss or provide text from a tribal cultural perspective regarding the cultural resources within the region.

CUL 2: *Archaeological Monitoring* – The implementing agency shall retain a qualified archaeological monitor during ground disturbing activities within native soils (below the fill level) that have the potential to impact significant archaeological resources, as determined by a qualified archaeologist in consultation with the implementing agency, and any local Native American representatives expressing interest in the Project.

CUL 3: *Inadvertent Discovery of Archaeological Resources During Construction* – A qualified archaeologist shall prepare an Inadvertent Discovery Plan for the Project. During Project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist shall be contacted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agency and any local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Per CEQA Guidelines Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, Project re-route or re-design, Project cancellation, or identification of protection measures such as capping or fencing. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as an historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

c. Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. Ground disturbance within native soils may potentially contain unanticipated human remains, including those interred outside of formal cemeteries. Existing regulations require that if human remains and/or cultural items defined by the Health and Safety Code, Section 7050.5, are inadvertently discovered, all work in the vicinity of the find would cease and the Orange County Coroner would be contacted immediately. If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5, the coroner will contact the NAHC by telephone within 24 hours. The NAHC shall immediately notify the person it believes to be the Most Likely Descendant (MLD) as stipulated by California PRC, Section 5097.98. The MLD(s), with the permission of the landowner and/or authorized representative, shall inspect the site of the discovered remains and recommend treatment regarding the remains and any associated grave goods. The MLD shall complete their inspection and make their recommendations within 48 hours of notification by the NAHC. Any discovery of human remains would be treated in accordance with Section 5097.98 of the PRC and Section 7050.5 of the Health and Safety Code. Therefore, with compliance with existing regulations, Project impact would be less than significant.

Mitigation Measures: No mitigation is required. Compliance with existing regulations will ensure that any Project impact on human remains would be less than significant.

This page intentionally left blank

3.4.6 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

Existing Conditions:

The largest types of energy use in the City are, in order: transportation (gasoline and diesel fuel), energy conversion and transmission bases, and residential natural gas and electricity (City of Santa Ana 1982c). The Energy Element of the General Plan contains energy consumption reduction strategies including increasing the energy efficiency of all aspects of City operations. In 2008, City municipal operations consumed approximately 57.7 million kWh of electricity (ICLEI-USA 2015).

Discussion:

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. According to the CEQA Guidelines, "[u]ses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified." Therefore, the purpose of this analysis is to identify any significant irreversible environmental effects of Project implementation that cannot be avoided.

Both construction and operation of the Proposed Project would lead to the consumption of limited, slowly renewable, and non-renewable resources, committing such resources to uses that future generations would be unable to reverse. The Project would require the commitment of resources that include: (1) building materials; (2) fuel and operational materials/resources; and (3) the transportation of goods and people to and from the Proposed Project.

During Project construction, energy will be consumed in the form of electricity associated with powering lights, electronic equipment, or other construction activities necessitating electrical power. Project construction will also consume energy in the form of petroleum-based fuels associated with the use of construction vehicles and equipment on the Project site, construction worker travel to and from the Project site, and truck trips delivering building materials to the Project site and hauling solid waste from the Project site.

During Project operation, energy consumption will involve electricity to run the well facilities and petroleum-based fuels associated maintenance trips to and from the Project site.

The construction of the Project will require an estimated 4,268 gallons of gasoline and 46,287 gallons of diesel fuel to power construction equipment. Annual Project operations is estimated to demand 797 gallons of gasoline and 1,693,811 kWh of electricity.

Consumption of fuel would be short-term during construction. During operation, the weekly trips would consume small amounts of fuel, that may be further reduced when the City uses one of its alternative fuel vehicles. The estimated operational electricity usage of the Project represents approximately 0.03 percent of the estimated annual electricity demand for the City of Santa Ana's municipal operations in the year 2008.

The Proposed Project will comply with all applicable regulations and codes which require achievement of various levels of energy efficiency in building construction, design and operation. The consumption of such resources would represent a long-term commitment of those resources. The commitment of resources required for the construction and operation of the Proposed Project would limit the availability of such resources for future generations or for other uses during the life of the Project. However, use of such resources will be short-term and minimal during construction and during operation will not result in energy consumption requiring a significant increase in energy production for the energy provider. In addition, the Proposed Project will comply with all applicable regulations and codes. Therefore, the energy demand associated with the proposed Project will be less than significant.

Mitigation Measures: No mitigation is required. Regulatory compliance will maintain impacts at a less than significant level.

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

No Impact. As noted above, the Project will not result in energy consumption requiring a significant increase in energy production for the energy provider. In addition, the Project will facilitate the City's goal of lessening their reliance on imported water from MWD, which will also reduce the energy required to deliver the imported water, The Project is not expected to conflict with or obstruct a state or local plan for renewable energy or energy efficiency and therefore, no impacts are expected.

Mitigation Measures: No mitigation is required.

3.4.7 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 of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
	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 topsoil?			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 an onsite or offsite 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 wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?				X
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?		X		

Existing Conditions:

The Project site and pipeline alignment are not located within an Alquist-Priolo Earthquake Fault Zone. The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along any one of several major active faults in the region. The known regional faults that could produce the most significant ground shaking at the Project site include the San Joaquin Hills Blind Thrust, Newport-Inglewood, Puente Hills Blind Thrust, and Elsinore-Whittier faults (Leighton 2019).

Based on the *Seismic Hazard Zone Map for the Newport Beach Quadrangle* (CGS 1998), the Project site is mapped in areas shown as potentially liquefiable.

Subsurface soils that underlie the existing asphalt pavement sections at the Project site, consist of 5 feet of artificial fill (Af) overlying Quaternary-aged young alluvial fan deposits (Qyf) to the maximum explored depth of 31½ feet. The fill materials generally consisted of silty sand, clayey sand, and silty clay with some gravel; and the alluvial deposits generally consisted of medium dense sand and silty sand, and medium stiff to stiff silty clay and clayey silt (Leighton 2019).

The historically high groundwater table in the Project area is on the order of 30 feet below the existing grade. During the subsurface geotechnical exploration for the Project, groundwater was not encountered in the borings drilled to a maximum depth of 31.5 feet (Leighton 2019).

Discussion:

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

Less than Significant Impact.

The well sites and pipeline alignment are not located within an Alquist-Priolo Earthquake Fault Zone (Leighton 2019). No active faults are known to cross the well sites or pipeline route (City of Santa Ana 1982d). The probability of damage because of surface ground rupture is low due to the lack of known active faults crossing the Project area. The proposed water well and supporting facilities have been designed in accordance with applicable seismic safety standards. The operation of the proposed Project, therefore, is not anticipated to expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death from the rupture of a known earthquake fault. The impact is anticipated to be less than significant.

Mitigation Measures: No mitigation is required.

ii.) Strong seismic ground shaking?

Less than Significant Impact. The Project is located within the seismically active Southern California region and is likely to experience strong ground shaking from seismic events generated on regionally active faults. The Project has been designed in accordance with applicable seismic safety standards. The operation of the proposed Project, therefore, is not anticipated to expose people or structures to potential substantial adverse effects from strong seismic ground-shaking. The impact is anticipated to be less than significant.

Mitigation Measures: No mitigation is required.

iii.) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. The Project is within a liquefaction hazard zone (CGS 1998). Construction projects within a liquefaction hazard zone require geotechnical reports to address and mitigate the potential vulnerability of structural integrity during earthquakes. Construction of the well and associated Project facilities will comply with applicable measures of the California Building Code regarding construction in a liquefaction zone and other seismic safety measures. Operation of the proposed Project would not expose people or structures to substantial impacts involving seismic-related ground failure from liquefaction; therefore, a less than significant impact would occur.

Mitigation Measures: No mitigation is required.

iv.) Landslides?

No Impact. The Project Site is not located in a landslide area. The land within and in the vicinity of the Project Site is relatively flat; thus, no impact from landslides is anticipated.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. Construction of the Project would include ground-disturbing activities, such as excavation, drilling, and grading in order to build the structure and install the associated pipelines that would connect the Project elements. Excess soil from the excavation of the infiltration basin will be placed as fill on the other portions of the site. As the proposed Project is less than one acre, the proposed Project would not be subject to the requirements of the Construction General Permit under the NPDES program administered by the State Water Resources Control Board. However, construction of the proposed Project would be required to comply with water quality control measures of the City's Municipal Code including specifically Chapter 18.156 – Control of urban runoff (City of Santa Ana 2019). The Project site will be paved or landscaped so that no exposed soil would remain. The Project will have a less than significant impact related to erosion and loss of topsoil in the construction and operational phases.

Mitigation Measures: No mitigation is required.

c. Is the project 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 onsite or offsite landslides, lateral spreading, subsidence, liquefaction, or collapse?

Less than Significant Impact. Based on the analysis provided in Response (a.) (iv) above, no impact would be experienced related to on-site or off-site landslides. Since the Project Site is located within a liquefaction hazard zone, the potential for liquefaction to occur during intense ground shaking does exist. The Project Site is also located in a subsidence hazard zone (City of Santa Ana 1982d). As with the potential for liquefaction, construction projects within a subsidence hazard zone require geotechnical reports to address and mitigate the potential vulnerability of structural integrity during earthquakes. Construction of the well facilities will comply with applicable measures of the California Building Code regarding construction in a liquefaction hazard zone, subsidence hazard zone, and other seismic safety measures. Operation of the proposed Project would not expose people or structures to substantial impacts involving seismic-related ground failure from liquefaction; therefore, a less than significant impact would occur.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. Expansiveness refers to the potential to swell and shrink with repeated cycles of wetting and drying and is a common feature of fine-grained clayey soils. This wetting and drying causes damage due to differential settlement within buildings and other improvements. The City of Santa Ana General Plan does not identify areas of expansive soils; however, the design and construction of the Project will comply with applicable regulations and standard specifications to prevent potential risk of damage from expansive soils. The Project would be required to comply with building codes in order to minimize the potential for hazards due to expansive soils. Therefore, regulatory compliance will ensure that impacts would be less than significant.

Mitigation Measures: No mitigation is required.

e. Would the project have soils that are incapable of supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. No septic tanks or alternative wastewater systems will be constructed as part of the Project, and no impacts will occur.

Mitigation Measures: No mitigation is required.

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

Less Than Significant with Mitigation Incorporated. The Project Site is not located in an area of paleontological sensitivity (County of Orange 2012). Given the highly disturbed condition of the Project Site and surroundings, the likelihood that paleontological resources or unique geologic features exist on-site is considered low. Nevertheless, ground-disturbing activities, such as grading or excavation, could unearth undocumented paleontological resources or unique geologic features by disturbing native soils that may contain such resources. The proposed Project could potentially cause a substantial adverse change in significance to a paleontological resource, but incorporation of the following Mitigation Measure GEO-1 would reduce the potential impact on paleontological resources to less than significant.

Mitigation Measures:

GEO-1: *Inadvertent Discoveries of Paleontological Resources* — If the construction staff or others observe previously unidentified paleontological resources during ground disturbing activities, they will halt work within a 200-foot radius of the find(s), delineate the area of the find with flagging tape or rope (may also include dirt spoils from the find area), and immediately notify a qualified Paleontologist. Construction will halt within the flagged or roped-off area. The Paleontologist will assess the resource as soon as possible and determine appropriate next steps in coordination with the City. Such finds will be formally recorded and evaluated. The resource will be protected from further disturbance or looting pending evaluation.

3.4.8 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 any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?				X

Existing Conditions:

The State of California has enacted key legislation in an effort to reduce its contribution to climate change. Climate change is a result of greenhouse gases emitted all around the world from sources such as the combustion of fuel for transportation and heat, cement manufacture, and refrigerant emissions.

AB 32, the California Global Warming Solutions Act of 2006, requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. The Air Resources Board is the State agency charged with monitoring and regulating sources of emissions of greenhouse gases. AB 32 requires the Air Resources Board to adopt and implement a list of discrete and early action greenhouse gas reduction measures, which was completed in October 2007.

The SCAG is the regional planning agency for ensuring implementation of Senate Bill 375. Senate Bill 375, or the Sustainable Communities and Climate Protection Act of 2008, supports the State's climate action goals to reduce greenhouse gas (GHG) emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Under the Sustainable Communities Act, the Air Resources Board sets regional targets for GHG emissions reductions from passenger vehicle use.

Area sources of GHG include emissions from natural gas combustion, fireplaces, landscaping equipment, consumer products, and architectural coatings. Indirect sources include emissions from energy consumption and water conveyance. Mobile sources include emissions from passenger vehicles and delivery trucks. Typically, mobile sources are the primary contributor of GHG emissions.

Discussion:

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

Less than Significant Impact. For this Project, the major source of GHG emissions is the combustion of fuel in construction equipment and vehicles, vehicles used to haul materials, and vehicles used by workers commuting to and from the site. Construction of the Project will increase GHG generation, which can contribute to global climate change.

There are three types of GHG from fuel combustion, including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming

equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_2e can be represented by the following equation:

CO_2e Emissions = CO_2 Emissions + 21 x CH_4 Emissions + 310 x N_2O Emissions

The CalEEMod model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are the following:

1. CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
2. CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
3. N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

Construction Impacts

The CalEEMod model was used to estimate GHG emissions during the construction phase of the proposed Project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2e emissions were estimated. The GHG emissions for each construction year are compared with SCAQMD's GHG screening threshold and summarized in Table 3-5.

Operational Impacts

Water produced from the well would be disinfected using NaOCl before being discharged to the John Garthe Reservoir. The electricity used for pumping groundwater and the application of NaOCl would be generated off-site site and is therefore classified as indirect emissions in the form of GHGs.

Emissions associated with daily electricity requirements and maintenance of the well were calculated using CalEEMod. The operational CO_2e emissions are compared with SCAQMD's GHG screening threshold and summarized in Table 3-5.

As indicated in Table 3-5, short-term and temporary construction CO_2e emissions will not exceed the daily GHG threshold.

Table 3-5. Construction and Operational Emissions – GHG[a]

	CO_2e (tons/year)
Construction	
2020	425
2021	101
General Conformity De Minimis / SCAQMD GHG Screening Threshold	10,000
Exceeds Screening Threshold?	No
Operation	
On-site and Off-site Sources	551
General Conformity De Minimis / SCAQMD GHG Screening Threshold	10,000
Exceeds Screening Threshold?	No
[a] Compiled using the CalEEMod emissions inventory model, provided in the Appendix A.	

As indicated in Table 3-5, short-term and temporary construction CO_2e emissions will not exceed the daily GHG threshold.

Construction and operational emissions for the proposed Project will be temporary and finite and will be below those levels being considered and/or discussed by other government agencies and associations as consistent with the AB 32 Scoping Plan. The Project's construction-related GHG emissions cumulatively are not a considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions will be negligible, and cumulatively are not a considerable contribution to climate change. Operational impacts are considered less than significant, as well.

Due to the complex physical, chemical and atmospheric mechanisms involved in global climate change, there is no basis for concluding that the Project's theoretically small emissions increase could actually cause a measurable increase in global GHG emissions necessary to influence global climate change. The GHG emissions of the Project alone will likely not cause a direct physical change in the environment. It is global emissions in their aggregate that contribute to climate change, not any one source of emissions alone. Therefore, due to the incremental amount of GHG emissions estimated for this Project, and the lack of any evidence for concluding that the Project's GHG emissions could cause any measurable increase in global GHG emissions necessary to force global climate change, the Project is not considered to be hindering the goals of AB 32. Thus, because the Project would result in total GHG emissions less than the SCAQMD 10,000 tons CO_2e annual threshold, it is not considered to have a significant impact on a cumulative level.

The estimated daily contribution of GHG emissions is considered to have a less than significant greenhouse gas impact at both the Project and cumulative levels.

Mitigation Measures: No mitigation is required.

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

No Impact. The County of Orange has not yet developed a GHG Reduction Plan that meets the requirements set forth in the latest Office of Planning and Research guidelines; however, the SCAQMD has established a CO_2e annual threshold, as utilized in the analysis for GHG Threshold VII(a).

As shown in Table 3-5, the Project results in GHG emissions below the SCAQMD threshold of 10,000 tons per year. Therefore, the Project would not conflict with any applicable plan, policy, and/or regulation to reduce GHG emissions.

Predicted levels of CO_2e associated with the proposed Project will not inhibit the State's ability to implement AB 32. No impact is anticipated on implementation of the applicable plan, policy regulation to reduce greenhouse gas emissions.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.9 HAZARDS AND HAZARDOUS MATERIALS

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?				X
d.	Be located on a site that 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.	Be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public use airport, and 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 adopted emergency response plan or emergency evacuation plan?			X	
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.				X

Existing Conditions:

The Project area is urbanized with park, residential, commercial, and place of worship uses.

The Project Site is not included on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (DTSC 2019, CWRCB 2019).

The Project site is also not located within 2 miles of a public airport or public use airport. The nearest airport is John Wayne Airport located approximately 6.4 miles to the south. The Project site is not within the Orange County Airport Land Use Plan Area or the John Wayne Airport Safety Zone for John Wayne Airport (ALUC 2005).

The Orange County Fire Authority (OCFA) provides emergency response to fires and hazardous materials incidents in the City of Santa Ana. The City of Santa Ana maintains an Emergency Services Plan which provides direction and guidance for officials and citizens in the event of emergency; including emergencies related to major fires and/or explosions, industrial accidents, traffic control, and hazardous materials spills (City of Santa Ana 1982e).

Discussion:

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

Less than Significant Impact. The short-term construction process for the proposed Project would not involve any routine transport, use, or disposal of hazardous materials. Some examples of hazardous materials include fuels, lubricating fluids such as paints and adhesives, and solvents. Fuels and solvents for construction would be stored and utilized pursuant to existing regulatory requirements. Therefore, short-term construction impacts would be less than significant.

Operation of the well would require limited transport, storage, use, and disposal of hazardous materials. The Project would involve the use of sodium hypochlorite for disinfection. The chemical storage area will be fully contained and covered for protection from the elements.

All chemical storage and usage would comply with existing federal, State, and local requirements (including chemical hygiene requirements administered by the California Division of Occupational Safety and Health). During filling of storage tanks, City personnel will be present to guard against spillage. Wash down/containment facilities will also be available in the event of a spill. Property inspections will be made by the City to ensure protection of the public health, safety, and general welfare.

Strict safety procedures and best management practices will be implemented for fuel transport and during tank refueling. No disposal of hazardous materials would occur on-site. With the aforementioned procedures and BMPs implemented as part of the Project, impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. During construction, there is a potential for accidental release of hazardous substances such as petroleum-based fuels or hydraulic fluid used by construction equipment. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration of hazardous materials utilized during construction. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for accidental release of such substances into the environment. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, State, and federal law. As with the discussion for 3.4.8(a) above, all chemical and fuel storage and usage would comply with existing federal, State, and local requirements (including chemical hygiene requirements administered by the California Division of Occupational Safety and Health). During filling of storage tanks, personnel will be present to guard against spillage. Wash down/containment facilities will also be available in the event of a spill. Property inspections will be made to ensure protection of the public health, safety, and general welfare. With the aforementioned measures implemented as part of the proposed Project, impacts would be less than significant.

Mitigation Measures: No mitigation is required.

c. Would the project emit hazardous emissions or handle hazardous materials or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

No Impact. There are no schools within 0.25 mile. The closest school, Santiago Elementary School, is located approximately 0.5 mile to the south of the Project site. No impact would occur.

Mitigation Measures: No mitigation is required.

d. Is the project located on a site that is included on a list of hazardous material 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?

No Impact. Since the well site is not on the list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, there would be no hazard to the public or environment and therefore, no impact would be experienced.

Mitigation Measures: No mitigation is required.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?

Less Than Significant Impact. The Project site is also not located within 2 miles of a public airport or public use airport. The nearest airport is John Wayne Airport located approximately 6.4 miles to the south. The Project would not result in a safety hazard for people residing or working in the Project area and no impact would occur.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. For construction of the proposed Project, traffic control will be needed to temporarily reduce available lanes during the construction of the pipeline, storm drain, utility services and street resurfacing. Full road closures are not anticipated, however. In addition, a traffic control plan will be prepared to accommodate this work area width along the pipeline route. These impacts would be short term and temporary and would have a less than significant impact to roadways utilized for emergency purposes. During operation, the Project would not require full time employees at the site and thus would not increase the burden on existing emergency response plans. Only one weekly trip to the Site would be required during operation and thus would not generate traffic congestion, nor obstruct traffic flow or emergency operations. During Project operation, emergency access would be maintained to all residences and public facilities since the existing adjacent roads would not be altered. Therefore, the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan and impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is located in an urbanized and fully developed area and is not located within or near any wildland areas (County of Orange 2012). Also, the proposed

landscaping would not create hazardous conditions due to wildland fires. Therefore, the Project would not pose a fire hazard due to wildland fires and no impact would occur.

Mitigation Measures: No mitigation is required.

3.4.10 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 that would:			X	
	(i) result in substantial erosion or siltation on site or off site?				
	(ii) substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?			X	
	(iii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
	(iv) impede or redirect flood flows?			X	
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

Existing Conditions:

Surface Water

The well site is currently developed with the existing well and surrounded by park uses and ornamental vegetation. The surrounding area is developed with residential and place of worship land uses. Stormwater flows across the site to storm drains located in the surrounding streets.

The Project and the surrounding areas are in a Federal Emergency Management Agency (FEMA) Flood Zone X, where the probability of flooding inundation has been evaluated to be 0.2 percent (i.e. a 500-year event; FEMA 2009). It is also in an area with reduced flood risk due to levee protection.

The Project is not within the Prado Dam Inundation Area but is within the Santiago Reservoir Inundation Area (City of Santa Ana 1982e).

The Project site is not located in a tsunami run-up area (California Emergency Management Agency 2009).

The Santa Ana River is the major drainage channel flowing through the City and many of the major storm drains in the City, are (directly or indirectly) connected to it. The reach through Santa Ana consists mostly of a trapezoidal, concrete lined channel with a bottom width of 180 feet. Santiago Creek is the main tributary to the Santa Ana River, joining the Santa Ana River just south of Garden Grove Boulevard (City of Santa Ana 1998). The Santa Ana River is located approximately 0.4 mile to the west of the Project well site and Santiago Creek is located approximately 0.3 mile to the south of the Project well site.

The City of Santa Ana is served by two primary flood control and drainage systems: City-operated and -maintained storm drain system, including catch basins and storm drain pipes; and flood control facilities operated and maintained by the Orange County Flood Control District, including the large flood control channels in the City (City of Santa Ana 2015). The NPDES Stormwater Permit issued to the County of Orange and its co-permittees (including the City of Santa Ana) requires development projects to incorporate appropriate best management practices to minimize pollutant levels in runoff (County of Orange 2017).

The City of Santa Ana's Municipal Code Section 18-156 Control of urban runoff sets forth the requirements to ensure that all new development and significant redevelopment meet the requirements of the NPDES permit and the Orange County Drainage Area Master Plan (City of Santa Ana 2019).

Groundwater

The historically high groundwater table in the Project area is on the order of 30 feet below the existing grade. During the subsurface geotechnical exploration for the Project, groundwater was not encountered in the borings drilled to a maximum depth of 31.5 feet (Leighton 2019).

Discussion:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact.

Short-term Impacts

The proposed Project could potentially result in water quality impacts during the short-term construction process. The grading and excavation required for Project implementation would result in exposed soils that may be subject to wind and water erosion. Since the Project impact area would be below one acre, the proposed Project would not be subject to the requirements of the Construction General Permit under the NPDES program administered by the State Water Resources Control Board. However, construction of the proposed Project would be required to comply with water quality control measures of the City's Municipal Code including specifically Chapter 18.156 – Control of urban runoff (City of Santa Ana 2019). This would include requirements for the implementation of BMPs to minimize the potential for water quality impacts during construction.

Long-Term Operational Impacts

The proposed Project would not affect hydrology or water quality in the Project area upon completion of construction. Development of the Well Site would not increase the amount of impervious area as compared to existing conditions. The Project is not expected to alter the drainage conditions in the Project area. Impacts would be less than significant.

Mitigation Measures: No mitigation is required.

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. The City's potable water is obtained by pumping from the Orange County Groundwater Basin using 21 existing groundwater wells or importing water via seven (7) MWD connections. Some City wells produce groundwater with elevated nitrate levels. Therefore, the City has developed a Nitrate Blending Plan to mix high nitrate groundwater with low nitrate groundwater. It is the City's goal to rehabilitate Well No. 32 and re-commission the well for service. By reinstating Well No. 32, the City can more effectively improve the water supply reliability and help ease the burden on the other water production distribution facilities.

Implementation of the Project would not result in any exceedance of the City's existing water entitlements. Rather, it would improve reliability and efficiency of the supply system. In addition, the Project will result in a very small increase in impervious surface and will not result in any significant change to groundwater recharge opportunity, Thus, the Project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level. Therefore, impacts to groundwater supply would be less than significant.

Mitigation Measures: No mitigation is required.

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 that would:

(i). Result in substantial erosion or siltation on site or off site?

Less than Significant Impact. Refer to Response 3.4.10(a) above. Development of the Project is not expected to alter drainage conditions in the Project area. Thus, impacts in this regard would be less than significant.

Mitigation Measures: No mitigation is required.

(ii). Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?

Less than Significant Impact. Refer to Responses 3.4.10(a) and 3.4.10(c) above. The proposed Project is not expected to alter off-site runoff in comparison to existing conditions. Impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. Refer to responses 3.4.10(a) and 3.4.10(c) above. The Project is not expected to alter off-site runoff in comparison to existing conditions. Therefore, impacts to stormwater drainage systems would be less than significant.

Mitigation Measures: No mitigation is required.

(iv). Impede or redirect flood flows?

Less than Significant Impact. Refer to responses 3.4.10(a) and 3.4.10(c) above. Impacts to water quality are expected to be less than significant.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. The Project site is not located within a 100-year floodplain (FEMA 2009). The Project is within the Santiago Reservoir Inundation Area (City of Santa Ana 1982e), so in the event of a dam breach the area could be flooded. However, flood depths would be less than 1 foot in the event of a levee failure and are not considered a significant risk. In addition, the Project and the surrounding areas are in FEMA Flood Zone X where the probability of flood inundation is only 0.2 percent. As a result, potential impacts to structures would be less than significant, and these facilities will not require active and on-site operations personnel so no injury or death from flooding is anticipated. The Project site is not located near any areas at risk for seiche, tsunami or mudflows; therefore, no impacts associated with these hazards would occur.

Mitigation Measures: No mitigation is required.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant. Refer to Response 3.4.10(a) and 3.4.10(b) above. Development of the Project would include requirements for the implementation of BMPs to minimize the potential for water quality impacts during construction. In addition, the Project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the groundwater table level. A less than significant impact would occur.

Mitigation Measures: No mitigation is required.

3.4.11 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

Existing Conditions:

The Project is located within a residential area of the City of Santa Ana. The well site is currently developed with the existing well and surrounded by park uses.

Land use in the City of Santa Ana is directed by the City of Santa Ana General Plan (City of Santa Ana 1998). According to the Santa Ana General Plan Land Use Map, the land use designation for the Project site is O (Open Space) and it is zoned O (Open Space). The surrounding areas have residential land use designations and zoning.

The City of Santa Ana's General Plan O (Open Space) designation is applied to parks, water channels, cemeteries and other open space uses.

The City of Santa Ana Municipal Code Section 41-584 states that permitted uses in the O zoning district include public utility structures (City of Santa Ana 2019).

The Project site is not located within any habitat conservation plan areas or natural community conservation plan areas.

Discussion:

a. Would the project physically divide an established community?

No Impact. The Project area is urbanized with park, residential, and place of worship land uses. The Project site is small in size and rehabilitation of the water well facilities would not hinder pedestrians or travelers on the adjacent streets or sidewalks from accessing other areas in the surrounding community. Therefore, the proposed Project would not divide an established community and no impact would occur.

Mitigation Measures: No mitigation is required.

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

No Impact. The permitted uses for the Project site O zoning district includes public utility structures. Since the proposed Project is considered an allowed use in this zoning district, the proposed Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project; therefore, no impacts would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.12 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

Existing Conditions:

Mineral Resource Zones are commercially viable mineral or aggregate deposits, such as sand, gravel, and other construction aggregate. The mineral resources in Orange County consist of deposits of regionally significant aggregate resources identified by the California Department of Conservation, Divisions of Mines and Geology (County of Orange 2012). These significant sand and gravel resources for the Orange County region are located in portions of the Santa Ana River, Santiago Creek, San Juan Creek, Arroyo Trabuco and other areas. Orange County's petroleum resources are in the form of oil and natural gas deposits. The primary petroleum resource areas of the County are Huntington Beach**,** Newport Beach, Seal Beach and the Brea/La Habra foothill regions. The Project site is not located near any of these areas.

Discussion:

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

No Impact. No mineral recovery activities currently occur in the Project area, and the Project site is not underlain by any known mineral resources of value to the region and residents of the State. Thus, no impacts would occur.

Mitigation Measures: No mitigation is required.

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

No Impact. As stated above, the Project site is not located within a Mineral Resource Zone or an area of oil and gas resources. Thus, no impacts would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.13 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 a 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 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?				X

Existing Environment:

The existing noise environment in the vicinity of the existing Well 32 consists of vehicle noise from North Westwood Avenue, West Memory Lane, and Freeman Lane. Existing land uses located adjacent to the Well 32 location include the Santa Ana United Methodist Church located directly south, Morrison Park located directly north, and single-family residences located to the west directly across North Westwood Avenue. No ambient noise monitoring data have been identified for the Project vicinity, but existing land uses and street patterns as well as the existing noise contours published in the City of Santa Ana's Noise Element indicate that the existing ambient noise levels at the proposed Project site should be at or below 60 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL).

Discussion:

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

Less than Significant with Mitigation Incorporated. The City of Santa Ana's Noise Element to the General Plan identifies the land use compatibility standard for noise-sensitive land uses as a CNEL of 65 dBA. No ambient noise monitoring data have been identified for the Project vicinity, but existing land uses and street patterns indicate within the City of Santa Ana's Noise Element that the existing ambient noise levels should be at or below the CNEL standard of 65 dBA at the Project site and adjacent properties. The City of Santa Ana's Municipal Code Chapter 18 Article VI limits noise propagation to residential land uses from stationary equipment during the daytime period (7:00 am to 10:00 pm) to 55 dBA L_{eq} and during the nighttime period (10:00 pm to 7:00 am) to 50 dBA L_{eq}.

The Well 32 improvements include a well building that will incorporate three separate rooms including housing the well head and piping as well as electrical cabinets and SCE switchgear. The building construction will be reinforced, solid grouted concrete masonry walls, a shallow concrete foundation, and a concrete floor slab-in-grade. This well building will also contain an above ground 250 HP motor with a noise emission level not to exceed 90 dBA at 1 meter. Given that this pump is enclosed noise levels from the pump operations will be below the City of Santa Ana's nighttime noise threshold limit of 50 dBA L_{eq} at the nearest residential receptor located approximately 100 feet to the west. Therefore, the noise levels generated by the proposed Project will comply with the City of Santa Ana's General Plan and Municipal Code. Based on the existing noise levels generated by the vehicle traffic of 60 dBA, the noise impacts from the Project related equipment of 50 dBA would result in an increase of less than one dBA to the existing ambient noise levels at the nearest residential property lines. The noise impacts from the Well 32 operations are considered to be less-than-significant.

Construction of the Well 32, and the pipeline is planned to start in the first quarter of 2020 and last approximately 14 months. The Project construction activities are anticipated to occur in phases and include demolition of the existing well vault, pipeline construction, well equipping and construction of well, well testing and commissioning, and site cleanup and demobilization. These construction activities would require a variety of equipment. Typical construction equipment would not be expected to generate noise levels above 90 dBA at 50 feet, and most equipment types would typically generate noise levels of less than 85 dBA at 50 feet. The City Santa Ana's Municipal Code Chapter 18 Section 18.314 exempts construction equipment operating between the daytime hours of 7:00 a.m. to 8:00 p.m. on weekdays, including Saturday. The construction of the proposed Project would be conducted during weekdays between the hours of 7:00 a.m. to 8:00 p.m. and would comply with the City of Santa Ana's Municipal Code.

The highest noise levels during construction of the Project will be generated during the demolition and pipeline construction. During the demolition phase the maximum instantaneous noise level (L_{max}) is expected to range from 74 – 84 dBA at the nearest sensitive receptor located at a distance of approximately 100 feet. The pipeline construction would result in noise levels ranging from 67 to 79 dBA L_{max} at a distance of approximately 100 feet to the nearest sensitive receptor. The noise levels from the construction would be loud enough to temporarily interfere with speech communication outdoors and indoors with the windows open. Project construction would occur between the hours of 7:00 a.m. and 8:00 p.m., Monday through Friday as well as implement standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction, and the implementation of Mitigation Measure NOISE-1, the temporary increase in noise due to construction is considered to be a less than significant impact.

Mitigation Measures:

NOISE-1: Construction noise levels shall fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and sensitive receptor, and the presence or absence of barriers between noise source and receptors. Therefore, the Project applicant should require construction contractors to limit standard construction activities as follows:

- Equipment and trucks used for Project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).
- Stationary noise sources shall be located as far from adjacent receptors as possible and shall be muffled and enclosed within temporary sheds, incorporate insulation barriers or other measures to the extent feasible.

- Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for Project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used such as drilling rather that impact equipment whenever feasible.
- No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions.
- No construction activity shall take place on Sundays or Federal holidays.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Operation of the pump facility would not generate vibration; however, construction of the structures and site grading would require the use of equipment that could generate vibration. Possible sources of vibration may include a drill rig, jackhammer, dump trucks, backhoes, rollers, and other construction equipment that produces vibration. No blasting will be required at the Project site.

Project construction activities would occur within approximately 100 feet from the nearest structure. According to the Federal Transit Administration guidelines, a vibration level of 65 VdB (velocity level in decibels) is the threshold of perceptibility for humans. For a significant impact to occur, vibration levels must exceed 80 VdB during infrequent events (FTA 2006). Based on the levels published by the Federal Transit Administration (FTA 2006) and the type of equipment proposed for use at the Proposed Project, coupled with the distance to the existing identified receptors as well as adjacent structures, analysis shows that all identified sensitive receptors and adjacent structures will be below the maximum vibration guideline criteria of 80 VdB. This vibration level is considered acceptable for short term infrequent impacts at residential homes as well as other nearby buildings and is, therefore, considered to be a less than significant impact.

Mitigation Measures: No mitigation is required.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There is no public airport or public use airport located within 2 miles of the proposed Project site. The Project would not result in exposing people residing or working in the Project area to excessive noise levels associated with a public airport and no impact would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.14 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 (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?			X	
b.	Displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Existing Conditions:

According to the City of Santa Ana's 2014-2021 Housing Element (City of Santa Ana 2014), population growth in the City of Santa Ana during the 1990s was significantly slower than surrounding communities and the county as a whole. Between 2000 and 2010 the City's population decreased by about 4 percent. In 2010, the City of Santa Ana's estimated population of 324,528 represented approximately 11 percent of the county's total population, ranking Santa Ana as the second most populated city in the county behind Anaheim. Estimates from the California Department of Finance show the City of Santa Ana's 2018 population to be 338,247, a 0.1 percent increase from 2017. The City has an estimated 78,052 housing units.

Discussion:

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

Less than Significant Impact. The proposed Project would improve local groundwater water reliability. However, implementation of the Project would not result in any exceedance of the City's existing water entitlements, just improve reliability and efficiency of the water supply system. The proposed Project would not involve the construction of any homes, businesses, or other uses that would result in direct population growth. Therefore, impacts in regard to growth-inducement would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is developed with existing well facilities and is not currently used for housing. Construction of the Project would not require the removal or obstruction of existing housing and thus would not require the displacement of people or the construction of replacement housing elsewhere. Therefore, no impacts would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.15 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 altered governmental facilities or a 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

Existing Conditions:

Public services include critical facilities such as police stations, fire stations, hospitals, shelters, and other facilities that provide important services to the community. Other public services include schools and parks and libraries that serve the communities.

Fire protection and other related services in Santa Ana are provided by the OCFA. The closet OCFA station to the Project site is Station No. 71, located at 1029 W. 17th Street, Santa Ana, approximately 1.04 miles south of the Project site (OCFA 2019).

Police protection services for the City of Santa Ana are provided by the City of Santa Ana Police Department at the Santa Ana Civic Center located at 60 Civic Center Plaza, approximately 1.5 miles south of the Project site (SAPD 2019).

The City of Santa Ana is served by four school districts: Santa Ana Unified, Garden Grove Unified, Tustin Unified and Orange Unified (City of Santa Ana 1988). The City owns and operates approximately 35 parks including Morrison Park (City of Santa Ana 1982g). The City library system consists of a central library in Civic Center' Plaza and two branch libraries in the western portion of Santa Ana: the McFadden and Newhope Branches (City of Santa Ana 1982f).

Discussion:

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

i.) Fire Protection

No Impact. The proposed Project would not increase the need for fire protection services as no residential uses are proposed and the Project is not expected to result in an increase in the City of Santa Ana's population. The water well would not cause the development of uses that would result in a substantial increase in the likelihood of a fire or other hazard. Moreover, by improving the City's water supply reliability for its service area, the Project is expected to result in beneficial impacts related to fire flow and protection. Therefore, no impacts to fire protection services or facilities are expected.

Mitigation Measures: No mitigation is required.

ii.) Police Protection

No Impact. The proposed Project would not increase the need for additional police protection services. The proposed Project would not introduce residential, commercial, or other uses, that would require an increase in demand for police protection beyond what is currently provided and therefore, would not require police facilities to be altered. The buildings on-site would be equipped with an alarm system for security purposes, and the proposed security fencing would limit unauthorized access. Therefore, no impacts to police protection services or facilities are expected.

Mitigation Measures: No mitigation is required.

iii.) Schools

No Impact. Implementation of the proposed Project would not result in the need for the construction of additional school facilities, as the Project would not result in an increase in population nor would it result in a removal of a school, a reduction of school capacity, or displacement of students from existing schools. Therefore, no impact to school services or facilities are expected.

Mitigation Measures: No mitigation is required.

iv.) Parks

Less Than Significant Impact. Implementation of the proposed Project would not result in the need for the construction of additional park facilities, as the Project would not result in an increase in population nor would it result in a removal of a park. Morrison Park will be impacted during well rehabilitation and construction with a portion of or all of the parking lot and current well site area used as the contractor's work area. Figures 2-7 and 2-8 show the work area that would be closed during the construction interval under either scenario. With either a portion of or all of the parking lot used by the contractor, the public still have direct access to the park itself, including the basketball and tennis courts with minimal disruption. Ample street parking will supplement the reduction in parking stalls. Park users will have to walk around the fenced area to reach the tennis courts, but it is only a short-term inconvenience. Impacts to parks would be less than significant.

Mitigation Measures: No mitigation is required.

v.) Other Public Facilities

No Impact. The proposed Project would not alter any of the government facilities in the area or produce a need for additional or new government services; therefore, no impacts to other public facilities are expected.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.16 RECREATION

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a.	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	
b.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				X

Existing Conditions:

The City owns and operates approximately 35 parks, including Morrison Park. Morrison Park is a Neighborhood Park of 5.07 acres in size. The park includes: a ball diamond, basketball courts, handball courts, a multi-purpose field, a playground, picnic tables, tennis courts, and 23 parking stalls. (City of Santa Ana 2019)

Discussion:

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

Less Than Significant Impact. Morrison Park will be impacted during well rehabilitation and construction with a portion of or all of the parking lot and current well site area used as the contractor's work area. Figures 2-7 and 2-8 show the work area that would be closed during the construction interval under either scenario. With either a portion of or all of the parking lot used by the contractor, the public still will have direct access to the park itself, including the basketball and tennis courts with minimal disruption. Ample street parking will supplement the reduction in parking stalls. Park users will have to walk around the fenced area to reach the tennis courts, but it is only a short-term inconvenience. Impacts to parks would be less than significant. The proposed Project would not add additional residences or business in the neighborhood and thus would not cause additional use of any park or other recreational facilities in the area. Therefore, no significant impacts to existing neighborhood and regional parks or other recreational facilities would occur.

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

No Impact. The proposed Project does not include recreational facilities or expansion of existing recreational facilities; therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

This page intentionally left blank

3.4.17 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, roadways, bicycle lanes 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

Existing Conditions:

Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. A new proposed pipeline will connect the well to the existing John Garthe Reservoir traversing North Westwood Avenue to West Memory Lane to North Bristol Street. The nearest airport is John Wayne Airport located approximately 6.4 miles to the south.

Discussion:

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

Less than Significant Impact. The proposed Project would not conflict with any transit plan or ordinance. Traffic control will be needed to temporarily reduce available lanes during construction of the pipeline and street resurfacing, but full road closures are not anticipated during construction. Construction equipment and staging for the well would be contained within the Project site. These impacts would be short term and temporary and would have a less than significant impact on circulation surrounding the site.

The normal operation of the well would generate one trip weekly for a worker to monitor the operation of the well facilities and perform maintenance as necessary. Periodic maintenance activities such as replacement of tanks and testing and maintaining equipment will require bi-weekly trips to the Site. This is considered an insignificant change in the trips in the vicinity of the Project Site. Therefore, long-term impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

Less than Significant Impact. As discussed in Section 3.4.17 (a), the Project would have less than significant impacts to traffic and circulation.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The proposed Project would include pavement replacement over the pipeline trenches. These changes are not expected to result in any design features that would increase hazards, and impacts would be less than significant.

Mitigation Measures: No mitigation is required.

d. Would the project result in inadequate emergency access?

No Impact. The proposed Project would not result in inadequate emergency access. The Project is the rehabilitation of a water well and supporting facilities, and will maintain adequate emergency access; therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

3.4.18 TRIBAL CULTURAL RESOURCES

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
a.	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		
b.	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, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

PRC section 21074 defines tribal resources as follows:

(a) "Tribal cultural resources" are either of the following:

(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

(B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Existing Conditions:

The SCCIC records search and NAHC sacred lands search did not identify any historical resources within or adjacent to the Project area of potential effect. As specified in the PRC Section 21080.31,[2] as amended by AB 52, Gatto, lead agencies must provide notice inviting consultation to California Native American tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if the Tribe has submitted a request in writing to be notified of proposed projects. The City was contacted by the Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation through AB 52 to be notified of the City's proposed projects.

Discussion:

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

Less Than Significant Impact With Mitigation Incorporated. The SCCIC records search and NAHC sacred lands search did not identify any historical resources within or adjacent to the Project area of potential effect. As a result, it is believed the proposed Project would not cause a substantial adverse change in the significance of a known historic resource as defined in PRC 5020.1 (k).

If construction ground disturbance depths range within native soils (below 5 feet), there would be a potential to impact previously unrecorded subsurface tribal cultural resources. With Mitigation Measures CUL-1 through CUL-3 incorporated, a less then significant impact is anticipated.

As specified in AB 52, the City provided written notification on June 24, 2019 to the Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation representatives regarding the Proposed Project. The Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation must respond in writing within 30 days of the City's notice of the Proposed Project. Should the Juaneno Band of Mission Indians/Acjachemen Nation or the Gabrieleño Band of Mission Indians – Kizh Nation request consultation regarding the Project site, in accordance with AB 52, the City as Lead Agency would facilitate such consultation.

The Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation representatives did not respond in writing within 30 days of Mesa Water District's notice of the Proposed Project. The City has completed the requirements for AB52. With implementation of Mitigation Measures CUL-1 through CUL-3, impacts to tribal cultural resources would be less than significant.

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

[2] Public Resources Code, Division 13, Chapter 2.6, Section 21.080.3.1.

5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant with Mitigation Incorporated. The records search and NAHC sacred lands search did not identify any significant tribal cultural resources within or adjacent to the Project API.

The City sent formal AB 52 notification letters on June 24, 2019 to the following:

- Joyce Stanfield Perry
  Tribal Manager
  Juaneño Band of Mission Indians – Acjachemen Nation
  4955 Paseo Segovia
  Irvine, CA 92603
- Andrew Salas
  Chairman
  Gabrieleño Band of Mission Indians – Kizh Nation
  PO Box 393
  Covina, CA 91723

The Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation must respond in writing within 30 days of the City's notice of the Proposed Project. Should the Juaneno Band of Mission Indians/Acjachemen Nation or the Gabrieleño Band of Mission Indians – Kizh Nation request consultation regarding the Project site, in accordance with AB 52, the City as Lead Agency would facilitate such consultation.

The Juaneno Band of Mission Indians/Acjachemen Nation and the Gabrieleño Band of Mission Indians – Kizh Nation representatives did not respond in writing within 30 days of Mesa Water District's notice of the Proposed Project. The City has completed the requirements for AB52.

With implementation of Mitigation Measures CUL-1 through CUL-3, impacts to tribal cultural resources would be less than significant.

This page intentionally left blank

3.4.19 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 that 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

Existing Conditions:

The City of Santa Ana's sewer collection system consists of approximately 450 miles of sewer mains, including approximately 60 miles of Orange County Sanitation District trunk sewers within the City (City of Santa Ana 2016).

The City of Santa Ana is served by two primary flood control and drainage systems: City-operated and -maintained storm drain system, including catch basins and storm drain pipes; and flood control facilities operated and maintained by the Orange County Flood Control District, including the large flood control channels in the City (City of Santa Ana 2015). The NPDES Stormwater Permit issued to the County of Orange and its co-permittees (including the City of Santa Ana) requires development projects to incorporate appropriate best management practices to minimize pollutant levels in runoff (County of Orange 2017).

The City operates a water distribution system which includes over 450 miles of water mains and over 44,000 water services. The City's potable water is obtained by pumping from the Orange County Groundwater Basin using 21 existing groundwater wells or importing water via seven (7) MWD connections.

The City of Santa Ana Public Works Agency coordinates the collection and recycling of solid waste. In 2016, nearly 87 percent of the solid waste landfilled from the City of Santa Ana was disposed of at the Frank Bowerman Landfill (Calrecycle 2019).

Discussion:

a. Would the project 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?

Less than Significant Impact. The proposed Project is the rehabilitation of a water well. Construction of the well also includes establishment of the associated housing structure and ancillary facilities. Construction of the well facilities would result in temporary and minor impacts to air, noise, parks, and traffic during construction activities, but these have been reduced through mitigation, where necessary, to maintain impacts at a less than significant level. All impacts from well operations are less than significant or no impact. Overall, impacts from construction and operation of the wells would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. Implementation of the wells would not result in any exceedance of the City's existing water entitlements. Rather, it would improve reliability and efficiency of the supply system. As such, no impacts would occur.

Mitigation Measures: No mitigation is required.

c. Would the project result in a determination by the wastewater treatment provider that 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?

No Impact. The proposed Project is would not require wastewater treatment and therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

d. Would the project 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?

Less than Significant Impact. The Project would not include any habitable structures and would not have the capability to produce solid waste during long-term operations. Although the Project may require the disposal of construction/demolition debris during the construction process (soil, asphalt, demolished materials, etc.), the generation of these materials would be short-term in nature and would not have the capability to substantially affect the capacity of regional landfills; therefore, impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. The proposed Project would comply with all federal, State, and local statutes and regulations related to solid waste, including the California Integrated Waste Management Act and City requirements for solid waste generated during the construction process; therefore, no impact would occur.

Mitigation Measures: No mitigation is required.

3.4.20 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 downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

Existing Conditions:

The Project site is located in an urbanized and fully developed area and is not located within or near any wildland areas (County of Orange 2012). The Project Site is not located in a landslide area. The land within and in the vicinity of the Project Site is relatively flat.

The OCFA provides emergency response to fires and hazardous materials incidents in the City of Santa Ana. The City of Santa Ana maintains an Emergency Services Plan which provides direction and guidance for officials and citizens in the event of emergency; including emergencies related to major fires and/or explosions, industrial accidents, traffic control, and hazardous materials spills (City of Santa Ana 1982e).

Discussion:

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

Less than Significant Impact. The Project site is not located within or near any wildland areas (County of Orange 2012). For construction of the proposed Project, traffic control will be needed to temporarily reduce available lanes during the construction of the pipeline, storm drain, utility services and street resurfacing. Full road closures are not anticipated, however. In addition, a traffic control plan will be prepared to accommodate this work area width along the pipeline route. These impacts would be short term and temporary and would have a less than significant impact to roadways utilized for emergency purposes. During operation, the Project would not

require full time employees at the site and thus would not increase the burden on existing emergency response plans. Only one weekly trip to the Site would be required during operation and thus would not generate traffic congestion, nor obstruct traffic flow or emergency operations. During Project operation, emergency access would be maintained to all residences and public facilities since the existing adjacent roads would not be altered. Therefore, the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan and impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. The Project site is not located within or near any wildland areas (County of Orange 2012). The land within and in the vicinity of the Project Site is relatively flat. In addition, the Project involves the rehabilitation of an existing well and does not include any habitable structures. Therefore, the Project would not expose people to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Mitigation Measures: No mitigation is required.

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

Less Than Significant Impact. The Project site is not located within or near any wildland areas (County of Orange 2012) and involves the rehabilitation of an existing well. Project activities will take place in an urban area and will result in well facilities similar to existing facilities. These facilities will not exacerbate fire risk. Impacts would be less than significant.

Mitigation Measures: No mitigation is required.

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

No Impact. The land within and in the vicinity of the Project Site is relatively flat. The Project is within the Santiago Reservoir Inundation Area (City of Santa Ana 1982e), so in the event of a dam breach the area could be flooded. However, flood depths would be less than 1 foot in the event of a levee failure and are not considered a significant risk. In addition, the Project and the surrounding areas are in FEMA Flood Zone X where the probability of flood inundation is only 0.2 percent. The Project site is not located within or near any wildland areas. The rehabilitation of an existing well would not exacerbate any flooding of landslide risks associated with post-fire conditions, therefore, no impacts are expected.

Mitigation Measures: No mitigation is required.

3.4.21 MANDATORY FINDINGS OF SIGNIFICANCE

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

Discussion:

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact with Mitigation Incorporated. As discussed in Section 3.4.4, Biological Resources, the Project is located in an urban area and does not provide biological habitat for species of concern or for federally listed species. The proposed Project would not have the potential to substantially degrade the quality of the existing environment, reduce habitat of fish or wildlife species, threaten plant or animal communities, and/or reduce the number or restrict the range of rare plants or animals.

In addition, as discussed in Section 3.4.5, Cultural Resources, the Project Site and surrounding area has been completely disturbed by development and has been subject to extensive ground disturbance in the past. As such, any historical, archaeological, and paleontological resources which may have existed in the Project site would have likely been disturbed. However, adherence to Mitigation Measures **CUL-1** through **CUL-3** and **GEO-1** would be required in the event unexpected resources are uncovered during the grading and excavation process. With

implementation of recommended mitigation, the proposed Project is not expected to eliminate important examples of the major periods of California history or prehistory, and impacts would be less than significant.

Mitigation Measures: Implement Mitigation Measures **CUL-1** through **CUL-3** and **GEO-1.**

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

Less than Significant Impact. Since the Project would supplement existing well production, the Project would serve to enhance the efficiency and reliability of the City's water supply system. The Project would not result in substantial population growth within the area, either directly or indirectly. Although the Project may incrementally affect other resources at a less than significant level, the Project's contribution to these effects is not considered "cumulatively considerable", in consideration of the relatively nominal impacts of the Project and the mitigation measures provided to lessen impacts. Therefore, cumulative impacts would be considered less than significant.

Mitigation Measures: No additional mitigation is required beyond what is already included previously.

c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant Impact with Mitigation Incorporated. Previous sections of this Initial Study/Mitigated Negative Declaration reviewed the proposed Project's potential impacts related to aesthetics, air quality, geology and soils, greenhouse gases, hydrology/water quality, noise, hazards and hazardous materials, traffic, and other issues. As concluded in these previous discussions, the proposed Project would result in less than significant environmental impacts with implementation of the mitigation measures (e.g., for air quality and noise); therefore, the proposed Project would not result in environmental impacts that would cause substantial adverse effects on human beings and impacts would be less than significant.

Mitigation Measures: Implement Mitigation Measures **AIR-1** and **NOISE-1** to mitigate Project air quality and noise impacts.

4.0 LIST OF PREPARERS

City of Santa Ana, Public Works Agency (Lead Agency)

Armando Fernandez, P.E., Project Manager

Tetra Tech, Inc. (Technical Assistance)

Paula Fell, Project Manager
Derrick Coleman, PhD, Deputy Project Manager
Jenna Farrell, Cultural Resources
Julia Mates, Cultural Resources
Kevin Fowler, Noise
Jeff Harrington, Air Quality/GHG
Tiffanie Ramos, Air Quality/GHG
DeeAnna Garcia, Word Processor/Editor
Katherine Brady, Mapping/Graphics

This page intentionally left blank

5.0 REFERENCES

Airport Land Use Commission (ALUC)

2005 Airport Land Use Commission for Orange County Airport Planning Areas, Figure 1. July 21.

California Code of Regulations

Title 14. Natural Resources, Division 6. Resources Agencies, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act, Article 6. Negative Declaration Process, Sections 15070 to 15075. URL: http://leginfo.legislature.ca.gov/.

California Department of Conservation

2018 Division of Land Resource Protection. 2018. California Important Farmland Finder. https://maps.conservation.ca.gov/.

California Department of Transportation (Caltrans)

2018 California Scenic Highway Mapping System. URL: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm.

California Emergency Management Agency

2009 Tsunami Inundation Map for Emergency Planning, Newport Beach Quadrangle, March 15, 2009.

Calrecycle

2019 Jurisdictional Disposal by Facility, disposal during 2018 for Santa Ana. June 14, 2019.

California Geological Survey (CGS)

1998 *Seismic Hazard Zone Map for the Newport Beach Quadrangle*.

California State Water Resources Control Board (CWRCB)

2019 Geotraker. http://geotracker.waterboards.ca.gov

City of Santa Ana

1982a City of Santa Ana General Plan, Scenic Corridors Element. Adopted September 20, 1982.

1982b City of Santa Ana General Plan, Conservation Element. Adopted September 20, 1982.

1982c City of Santa Ana Energy Element. Adopted September 20, 1982.

1982d City of Santa Ana General Plan, Seismic Safety Element. Adopted September 20, 1982.

1982e City of Santa Ana General Plan, Public Safety Element. Adopted September 20, 1982.

1982f City of Santa Ana General Plan, Public Facilities Element. Adopted September 20, 1982.

1982g City of Santa Ana General Plan, Open Space, Parks and Recreation Element. Adopted September 20, 1982.

1988 City of Santa Ana General Plan, Education Element. Adopted January 19, 1988.

1998 City of Santa Ana General Plan, Land Use Element. Adopted February 2, 1998.

2014 City of Santa Ana General Plan, 2014-2021 Housing Use Element. Adopted January 2014.

2015 City of Santa Ana Storm Drain Master Plan. December 2015.

2016 City of Santa Ana Sewer Master Plan Update Final Report. December 2016.

2019 City of Santa Ana Municipal Code. Available at: https://library.municode.com/ca/santa_ana/codes/code_of_ordinances Accessed January 15, 2019).

County of Orange

2012 Orange County General Plan. Amended 2012.

2017 Drainage Area Management Plan (DAMP). URL: http://www.ocwatersheds.com/documents/damp.

Department of Toxic Substances Control (DTSC)

2019 "EnviroStor" mapping tool, database of hazardous substance release sites, Government Code Section 65962.5. http://www.envirostor.dtsc.ca.gov/public/

Federal Emergency Management Agency (FEMA)

2009 Flood Insurance Rate Map, City of Santa Ana, California, Map Number 06059C0144J, Effective Date December 3, 2009.

Federal Transit Administration (FTA)

2006 Transit Noise and Vibration Impact Assessment Manual. Chapter 12: Noise and Vibration during Construction. FTA-VA-90-1003-06. May.

ICLEI-USA

2015 Santa Ana Climate Action Plan Final. December 2015.

Leighton Consulting, Inc. (Leighton)

2019 Geotechnical Exploration Report, Well 32 Rehabilitation Project, City of Santa Ana, California. Project No. 11769.001. January 4, 2019.

Orange County Fire Authority (OCFA)

2019 Orange County Fire Authority website. URL: http://ocfa.org/ Accessed January 15, 2019.

Santa Ana Police Department (SAPD)

2019 Santa Ana Police Department website. URL: http://www.ci.santa-ana.ca.us/pd/. Accessed January 15, 2019.

South Coast Air Quality Management District (SCAQMD)

2017 Final 2016 Air Quality Management Plan. Available at https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15. Accessed May 2019.

U.S. Fish and Wildlife Service (USFWS)

2019 National Wetlands Inventory, https://www.fws.gov/wetlands/data/mapper.html Accessed January 15, 2019.

U.S. Environmental Protection Agency (US EPA)

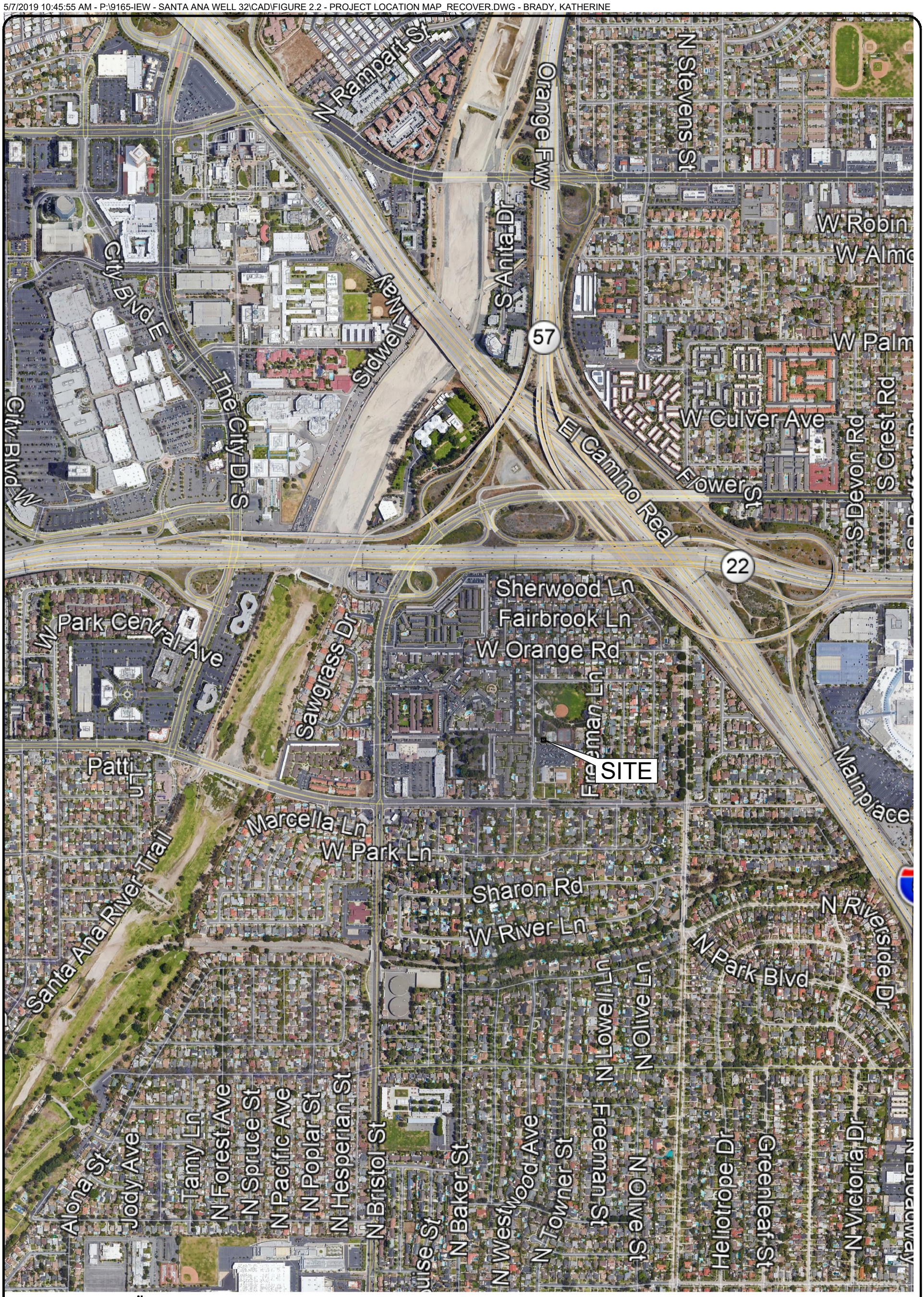
2019 De Minimis Tables. Available at https://www.epa.gov/general-conformity/de-minimis-tables. Accessed May 2019.

This page intentionally left blank

FIGURES

This page intentionally left blank

5/7/2019 10:45:55 AM - P:\9165-IEW - SANTA ANA WELL 32\CAD\FIGURE 2.2 - PROJECT LOCATION MAP_RECOVER.DWG - BRADY, KATHERINE



Legend

Site Boundary

N

APPROXIMATE SCALE IN FEET

0 800 1,600

Notes:

1. Aerial from Google Earth Pro, June 2018.

TETRA TECH

www.tetratech.com

17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
PHONE: (949) 809-5000 FAX: (949) 809-5010

SANTA ANA WELL NO. 32

PROJECT VICINITY MAP

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB
Figure	2-1

This page intentionally left blank

N

APPROXIMATE SCALE IN FEET

0 100 200

Notes:
1. Aerial from Google Earth Pro, June 2018.

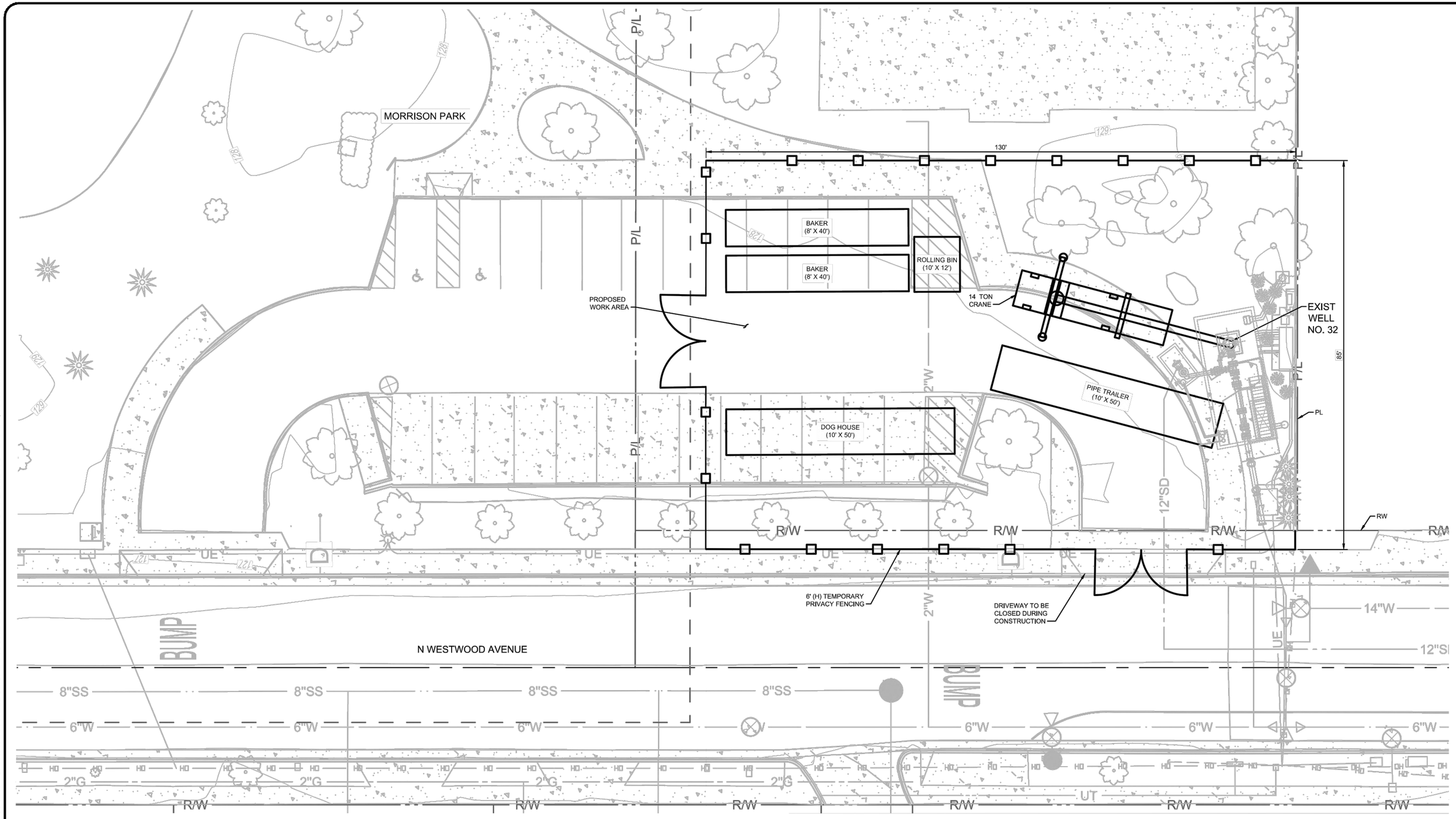
TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
PHONE: (949) 809-5000 FAX: (949) 809-5010

SANTA ANA WELL NO. 32

PROJECT LOCATION MAP

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB
Figure	2-2

This page intentionally left blank



NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

APPROXIMATE SCALE IN FEET

0 20 40

Bar Measures 1 inch

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

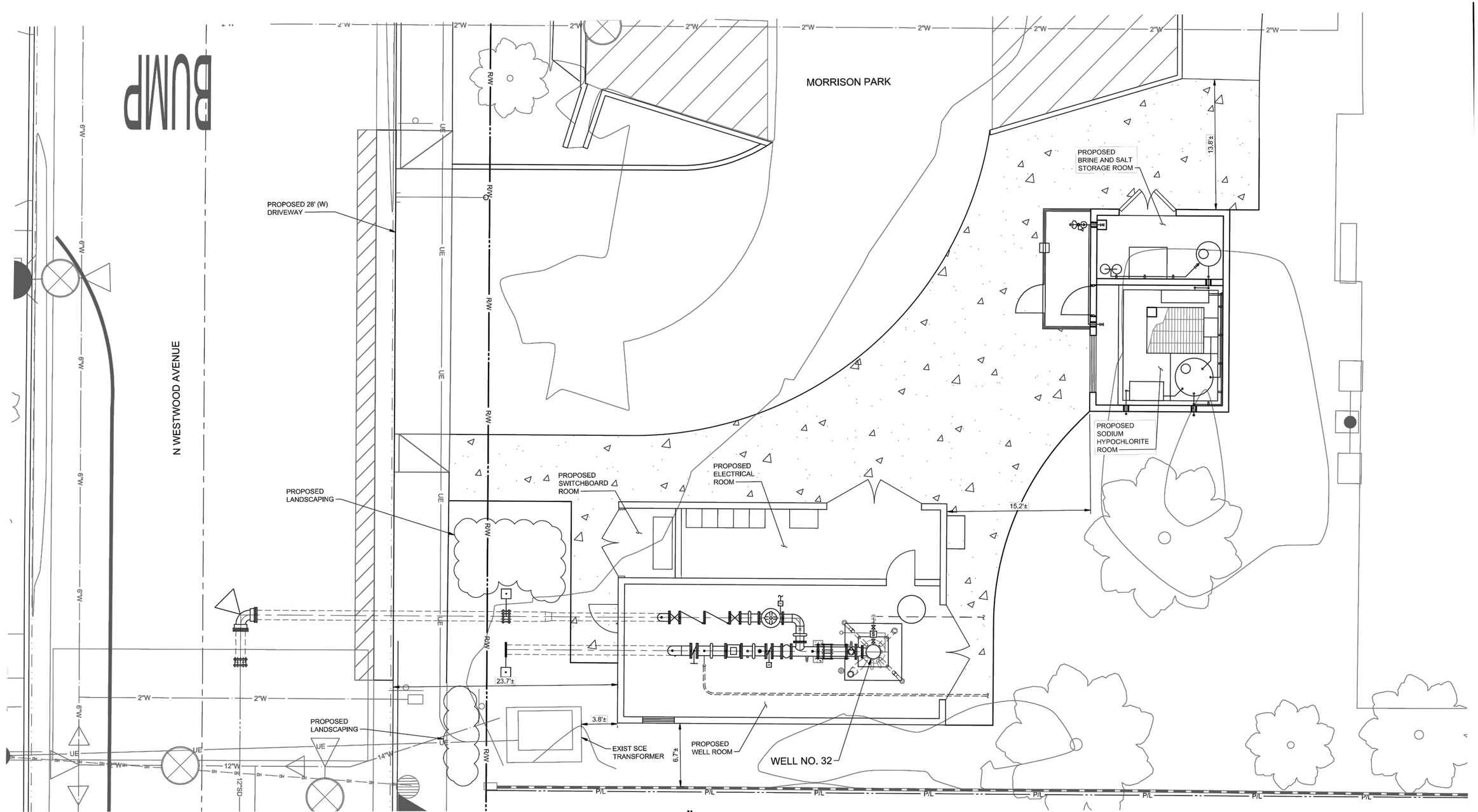
SANTA ANA WELL NO. 32

WELL NO. 32 LAYOUT PLAN

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB
Figure	2-3

4/4/2019 11:53:32 AM - P:\9165-IEW - SANTA ANA WELL 32\CAD\FIGURE 2-3 - WELL NO. 32 LAYOUT PLAN.DWG - BRADY, KATHERINE

This page intentionally left blank



NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

N

APPROXIMATE SCALE IN FEET

0 20 40

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

SANTA ANA WELL NO. 32

WELL NO. 32 SITE PLAN

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB

Figure 2-4

Bar Measures 1 inch

This page intentionally left blank

LEGEND

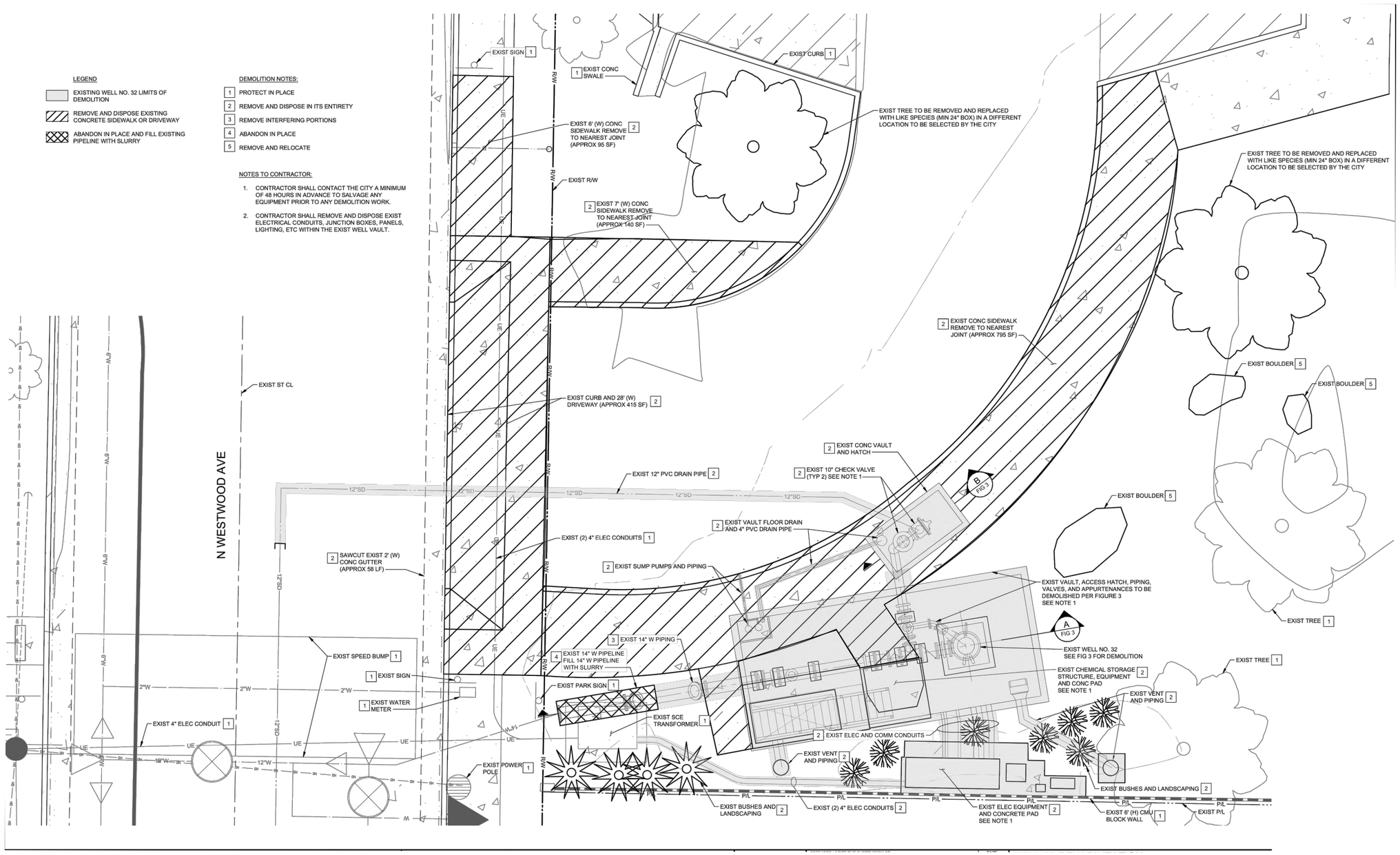
- EXISTING WELL NO. 32 LIMITS OF DEMOLITION
- REMOVE AND DISPOSE EXISTING CONCRETE SIDEWALK OR DRIVEWAY
- ABANDON IN PLACE AND FILL EXISTING PIPELINE WITH SLURRY

DEMOLITION NOTES:

1. PROTECT IN PLACE
2. REMOVE AND DISPOSE IN ITS ENTIRETY
3. REMOVE INTERFERING PORTIONS
4. ABANDON IN PLACE
5. REMOVE AND RELOCATE

NOTES TO CONTRACTOR:

1. CONTRACTOR SHALL CONTACT THE CITY A MINIMUM OF 48 HOURS IN ADVANCE TO SALVAGE ANY EQUIPMENT PRIOR TO ANY DEMOLITION WORK.
2. CONTRACTOR SHALL REMOVE AND DISPOSE EXIST ELECTRICAL CONDUITS, JUNCTION BOXES, PANELS, LIGHTING, ETC WITHIN THE EXIST WELL VAULT.



NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

N

APPROXIMATE SCALE IN FEET

0 5 10

Bar Measures 1 inch

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

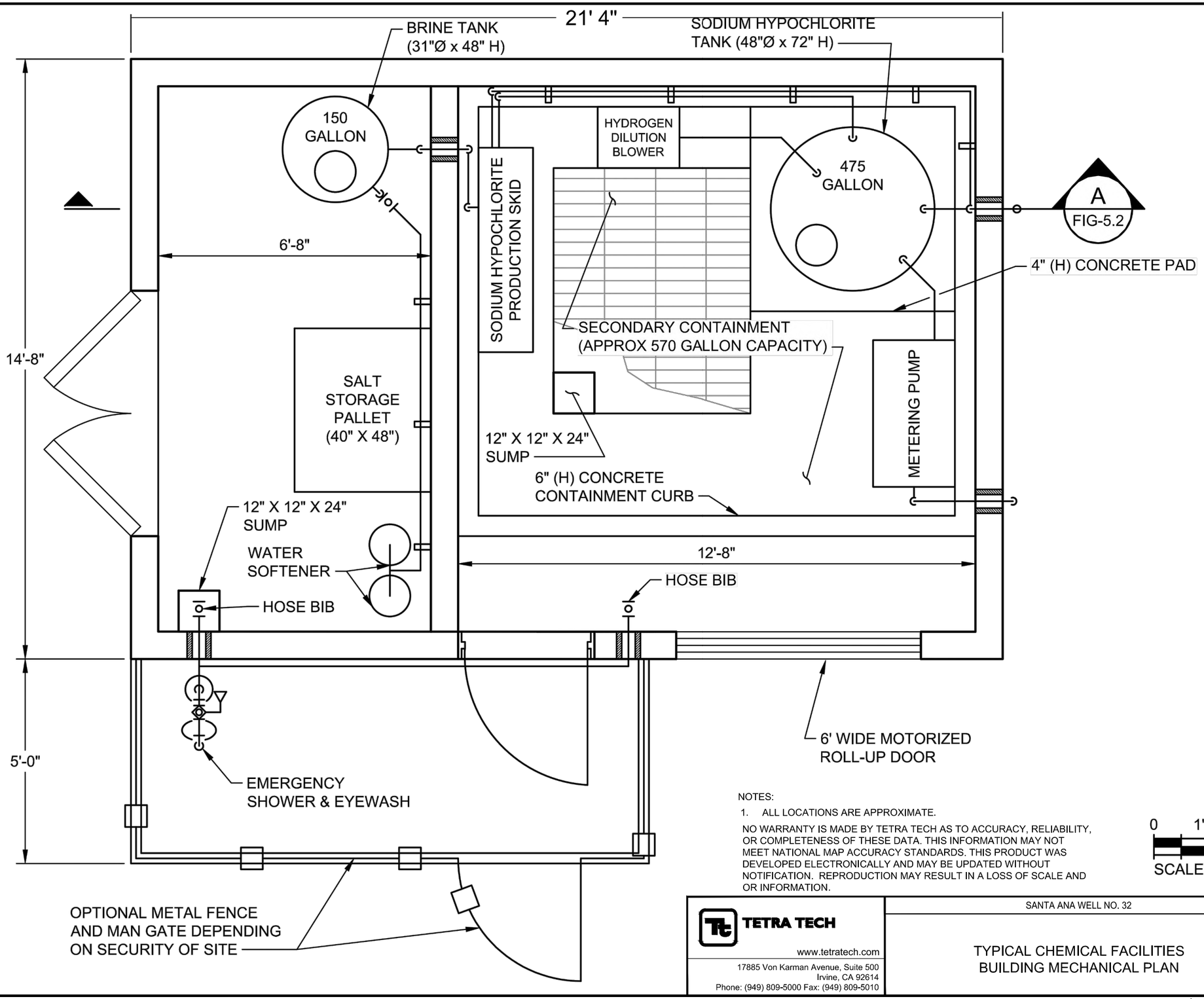
SANTA ANA WELL NO. 32

DEMOLITION PLAN

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB
Figure	2-5

4/4/2019 11:54:16 AM - P:\9165-IEW - SANTA ANA WELL 32\CAD\FIGURE 2-3 - WELL NO. 32 LAYOUT PLAN.DWG - BRADY, KATHERINE

This page intentionally left blank



NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

0 1'-4" 2'-8" 5'-4"

SCALE: 3/8" = 1'-0"

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

SANTA ANA WELL NO. 32

TYPICAL CHEMICAL FACILITIES
BUILDING MECHANICAL PLAN

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB

Figure
2-6

Bar Measures 1 inch

This page intentionally left blank

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

APPROXIMATE SCALE IN FEET

0 40 80

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

SANTA ANA WELL NO. 32

WORK AREA WITH PARTIAL PARKING LOT USE

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB
Figure	2-7

Bar Measures 1 inch

This page intentionally left blank

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

APPROXIMATE SCALE IN FEET

0 40 80

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

SANTA ANA WELL NO. 32

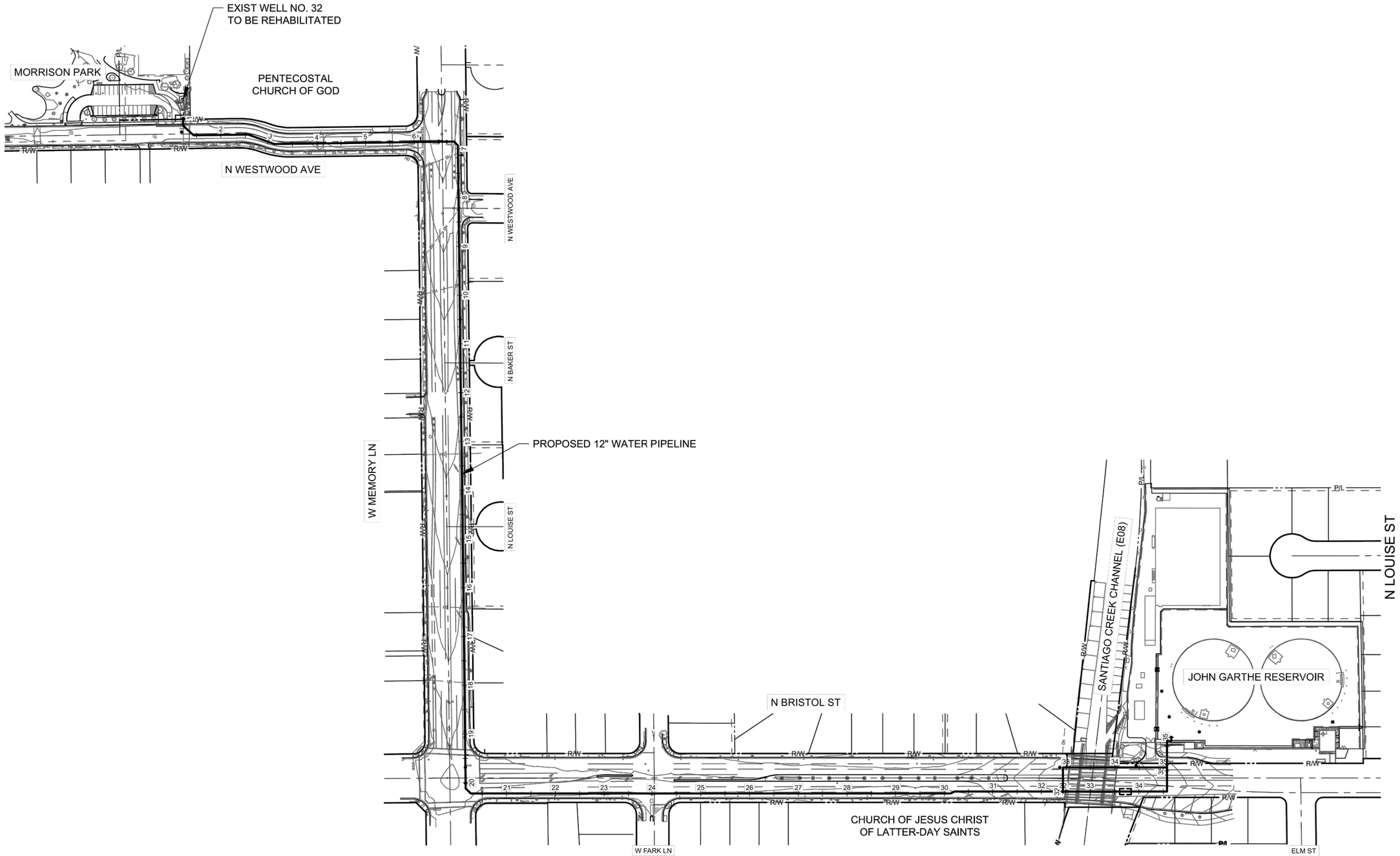
WORK AREA WITHOUT PARKING LOT USE

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB

Figure 2-8

Bar Measures 1 inch

This page intentionally left blank



NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.

NO WARRANTY IS MADE BY TETRA TECH AS TO ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA. THIS INFORMATION MAY NOT MEET NATIONAL MAP ACCURACY STANDARDS. THIS PRODUCT WAS DEVELOPED ELECTRONICALLY AND MAY BE UPDATED WITHOUT NOTIFICATION. REPRODUCTION MAY RESULT IN A LOSS OF SCALE AND OR INFORMATION.

APPROXIMATE SCALE IN FEET

0 200 400

Bar Measures 1 inch

TETRA TECH
www.tetratech.com
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
Phone: (949) 809-5000 Fax: (949) 809-5010

SANTA ANA WELL NO. 32

OVERALL SITE PLAN

Project No.:	194-9165
Date:	APRIL 2019
Designed By:	KLB

Figure
2-9

4/4/2019 11:59:50 AM - P:\9165-IEW - SANTA ANA WELL 32\CADIFIGURE 2-3 - WELL NO. 32 LAYOUT PLAN.DWG - BRADY, KATHERINE

This page intentionally left blank

Photo 1 Description: Looking East Toward Well 32 and Morrison Park Tennis Courts.

Photo 2 Description: Exisiting Well 32 Electrical Equipment, Chemical Storage.

TETRA TECH
www.tetratech.com
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614
Phone (949) 809-5000

SANTA ANA WELL NO. 32

PHOTOS OF PROJECT SITE

Project No.:	194-9165
Date:	MAY 2019
Designed by:	KLB

FIGURE
3-1

This page intentionally left blank

APPENDIX A

AIR QUALITY AND GREENHOUSE GAS EMISSIONS

This page intentionally left blank

Santa Ana Well #32 Rehabilitation

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.36	1,122.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Santa Ana Well #32 Rehabilitation - Orange County, Annual

Project Characteristics -

Land Use - Well Construction Footprint = 0.45 acres
Pipeline Construction Footprint = 1.91 acres (3475 ft. length of pipeline x 24 ft. wide workspace)
TOTAL = 2.36 acres
Building footprint = 1,122 SF (Well building = 809 SF, Chemical building = 313 SF)

Construction Phase - Construction phases and schedule provided by client

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Trips and VMT - Conservative assumptions for worker trips/day and total hauling trips

Demolition - Includes existing Well No. 32 limits of demolition and existing concrete sidewalk and driveway to be removed and disposed

Grading - Pipeline trenching (3475 ft x 2.5 ft trench)

Land Use Change -

Construction Off-road Equipment Mitigation - CEQA Handbook Table XI-C Mitigation Measures Fugitive Dust from Paved Roads

Operational Off-Road Equipment - Acid washing (monthly - 12), thorough cleaning (annually - 1), hose replacement (quarterly - 4), cell replacement (every 7-10 years, 3 days)

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	561	0
tblAreaCoating	Area_Nonresidential_Interior	1683	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	55.00
tblConstructionPhase	NumDays	220.00	50.00
tblConstructionPhase	NumDays	220.00	25.00
tblConstructionPhase	NumDays	20.00	30.00

tblConstructionPhase	NumDays	6.00	50.00
tblConstructionPhase	NumDays	10.00	40.00
tblEnergyUse	LightingElect	0.00	3.08
tblEnergyUse	NT24E	0.00	3.83
tblEnergyUse	T24E	0.00	1.71
tblGrading	AcresOfGrading	18.75	0.20
tblLandUse	LandUseSquareFeet	0.00	1,122.00
tblLandUse	LotAcreage	0.00	2.36
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00

tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	9.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	100.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	45.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	1,243.30
tblWater	ElectricityIntensityFactorToTreat	111.00	38.30
tblWater	OutdoorWaterUseRate	0.00	1,314,000,000.00

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					
2020	0.3638	3.2075	2.6891	4.9100e-003	0.1488	0.1684	0.3172	0.0715	0.1596	0.2311	0.0000	422.3693	422.3693	0.0897	0.0000	424.6119
2021	0.0693	0.6388	0.6775	1.1500e-003	5.6000e-003	0.0339	0.0395	1.4900e-003	0.0321	0.0336	0.0000	100.1495	100.1495	0.0209	0.0000	100.6708
Maximum	**0.3638**	**3.2075**	**2.6891**	**4.9100e-003**	**0.1488**	**0.1684**	**0.3172**	**0.0715**	**0.1596**	**0.2311**	**0.0000**	**422.3693**	**422.3693**	**0.0897**	**0.0000**	**424.6119**

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					
2020	0.3638	3.2075	2.6891	4.9100e-003	0.0743	0.1684	0.2427	0.0316	0.1596	0.1912	0.0000	422.3688	422.3688	0.0897	0.0000	424.6114
2021	0.0693	0.6388	0.6775	1.1500e-003	5.1600e-003	0.0339	0.0390	1.3800e-003	0.0321	0.0335	0.0000	100.1494	100.1494	0.0209	0.0000	100.6707
Maximum	**0.3638**	**3.2075**	**2.6891**	**4.9100e-003**	**0.0743**	**0.1684**	**0.2427**	**0.0316**	**0.1596**	**0.1912**	**0.0000**	**422.3688**	**422.3688**	**0.0897**	**0.0000**	**424.6114**

	ROG	NOx	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**	**48.53**	**0.00**	**21.00**	**54.76**	**0.00**	**15.09**	**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	3-2-2020	6-1-2020	0.5330	0.5330
2	6-2-2020	9-1-2020	0.8657	0.8657
3	9-2-2020	12-1-2020	1.7617	1.7617
4	12-2-2020	3-1-2021	0.9789	0.9789
		Highest	1.7617	1.7617

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	4.0600e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0816	3.0816	1.3000e-004	3.0000e-005	3.0926
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	6.4900e-003	0.0520	0.0611	1.1000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003	0.0000	9.0564	9.0564	5.2000e-004	0.0000	9.0695
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	536.5656	536.5656	0.0222	4.5800e-003	538.4852
Total	**0.0106**	**0.0520**	**0.0611**	**1.1000e-004**	**0.0000**	**2.9300e-003**	**2.9300e-003**	**0.0000**	**2.9300e-003**	**2.9300e-003**	**0.0000**	**548.7036**	**548.7036**	**0.0228**	**4.6100e-003**	**550.6473**

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	4.0600e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0816	3.0816	1.3000e-004	3.0000e-005	3.0926
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Offroad	6.4900e-003	0.0520	0.0611	1.1000e-004		2.9300e-003	2.9300e-003		2.9300e-003	2.9300e-003	0.0000	9.0564	9.0564	5.2000e-004	0.0000	9.0695
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	536.5656	536.5656	0.0222	4.5800e-003	538.4852
Total	**0.0106**	**0.0520**	**0.0611**	**1.1000e-004**	**0.0000**	**2.9300e-003**	**2.9300e-003**	**0.0000**	**2.9300e-003**	**2.9300e-003**	**0.0000**	**548.7036**	**548.7036**	**0.0228**	**4.6100e-003**	**550.6473**

	ROG	NOx	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

Santa Ana Well #32 Rehabilitation - Orange County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Rehabilitation	Trenching	3/2/2020	5/22/2020	5	60	
2	Demolition	Demolition	5/25/2020	7/3/2020	5	30	
3	Well Equipping and Building Construction (Only-1)	Building Construction	7/6/2020	9/18/2020	5	55	
4	Pipeline Construction	Grading	9/21/2020	11/27/2020	5	50	
5	Well Equipping and Building Construction (Overlap)	Building Construction	9/21/2020	11/27/2020	5	50	
6	Well Equipping and Building Construction (Only-2)	Building Construction	11/30/2020	1/1/2021	5	25	
7	Testing	Trenching	1/4/2021	2/26/2021	5	40	
8	Final Site Improvements	Paving	1/4/2021	2/26/2021	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Rehabilitation	Air Compressors	1	8.00	78	0.48
Well Rehabilitation	Cranes	1	8.00	231	0.29
Well Rehabilitation	Forklifts	1	8.00	89	0.20
Well Rehabilitation	Generator Sets	1	8.00	84	0.74
Well Rehabilitation	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Dumpers/Tenders	2	8.00	16	0.38
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-1)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-1)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-1)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-1)	Excavators	1	8.00	158	0.38
Well Equipping and Building Construction (Only-1)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-1)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-1)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-1)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-1)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-1)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Welders	1	8.00	46	0.45
Pipeline Construction	Air Compressors	1	6.00	78	0.48
Pipeline Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Pipeline Construction	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline Construction	Cranes	1	6.00	231	0.29
Pipeline Construction	Dumpers/Tenders	2	6.00	16	0.38
Pipeline Construction	Excavators	1	6.00	158	0.38
Pipeline Construction	Forklifts	1	6.00	89	0.20
Pipeline Construction	Generator Sets	1	6.00	84	0.74
Pipeline Construction	Graders	1	6.00	187	0.41
Pipeline Construction	Pavers	1	6.00	130	0.42

Pipeline Construction	Plate Compactors	1	6.00	8	0.43
Pipeline Construction	Rollers	1	6.00	80	0.38
Pipeline Construction	Rubber Tired Dozers	1	6.00	247	0.40
Pipeline Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline Construction	Trenchers	1	6.00	78	0.50
Pipeline Construction	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Overlap)	Air Compressors	1	6.00	78	0.48
Well Equipping and Building Construction (Overlap)	Cement and Mortar Mixers	1	6.00	9	0.56
Well Equipping and Building Construction (Overlap)	Cranes	1	6.00	231	0.29
Well Equipping and Building Construction (Overlap)	Dumpers/Tenders	2	6.00	16	0.38
Well Equipping and Building Construction (Overlap)	Excavators	1	6.00	158	0.38
Well Equipping and Building Construction (Overlap)	Forklifts	1	6.00	89	0.20
Well Equipping and Building Construction (Overlap)	Generator Sets	1	6.00	84	0.74
Well Equipping and Building Construction (Overlap)	Pavers	1	6.00	130	0.42
Well Equipping and Building Construction (Overlap)	Plate Compactors	1	6.00	8	0.43
Well Equipping and Building Construction (Overlap)	Rollers	1	6.00	80	0.38
Well Equipping and Building Construction (Overlap)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Well Equipping and Building Construction (Overlap)	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Only-2)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-2)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-2)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-2)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-2)	Excavators	1	8.00	158	0.38

Well Equipping and Building Construction (Only-2)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-2)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-2)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-2)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-2)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-2)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-2)	Welders	1	8.00	46	0.45
Testing	Aerial Lifts	1	8.00	63	0.31
Testing	Air Compressors	1	8.00	78	0.48
Testing	Cranes	1	8.00	231	0.29
Testing	Generator Sets	1	8.00	84	0.74
Testing	Plate Compactors	1	8.00	8	0.43
Testing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Final Site Improvements	Aerial Lifts	1	8.00	63	0.31
Final Site Improvements	Air Compressors	1	8.00	78	0.48
Final Site Improvements	Cement and Mortar Mixers	1	8.00	9	0.56
Final Site Improvements	Generator Sets	1	8.00	84	0.74
Final Site Improvements	Pavers	1	8.00	130	0.42
Final Site Improvements	Paving Equipment	1	8.00	132	0.36
Final Site Improvements	Rollers	2	8.00	80	0.38
Final Site Improvements	Sweepers/Scrubbers	1	8.00	64	0.46
Final Site Improvements	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Well Rehabilitation	5	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	7	20.00	0.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	18	40.00	0.00	100.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Testing	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Final Site Improvements	10	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Well Rehabilitation - 2020

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	0.0498	0.4195	0.3363	6.1000e-004		0.0225	0.0225		0.0217	0.0217	0.0000	52.0524	52.0524	8.8000e-003	0.0000	52.2724
Total	**0.0498**	**0.4195**	**0.3363**	**6.1000e-004**		**0.0225**	**0.0225**		**0.0217**	**0.0217**	**0.0000**	**52.0524**	**52.0524**	**8.8000e-003**	**0.0000**	**52.2724**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7500e-003	1.2300e-003	0.0140	5.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	4.2757	4.2757	1.0000e-004	0.0000	4.2782
Total	**1.7500e-003**	**1.2300e-003**	**0.0140**	**5.0000e-005**	**4.9400e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**4.2757**	**4.2757**	**1.0000e-004**	**0.0000**	**4.2782**

3.2 Well Rehabilitation - 2020

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	0.0498	0.4195	0.3363	6.1000e-004		0.0225	0.0225		0.0217	0.0217	0.0000	52.0523	52.0523	8.8000e-003	0.0000	52.2723
Total	**0.0498**	**0.4195**	**0.3363**	**6.1000e-004**		**0.0225**	**0.0225**		**0.0217**	**0.0217**	**0.0000**	**52.0523**	**52.0523**	**8.8000e-003**	**0.0000**	**52.2723**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7500e-003	1.2300e-003	0.0140	5.0000e-005	4.5500e-003	3.0000e-005	4.5900e-003	1.2200e-003	3.0000e-005	1.2500e-003	0.0000	4.2757	4.2757	1.0000e-004	0.0000	4.2782
Total	**1.7500e-003**	**1.2300e-003**	**0.0140**	**5.0000e-005**	**4.5500e-003**	**3.0000e-005**	**4.5900e-003**	**1.2200e-003**	**3.0000e-005**	**1.2500e-003**	**0.0000**	**4.2757**	**4.2757**	**1.0000e-004**	**0.0000**	**4.2782**

3.3 Demolition - 2020

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					9.8000e-004	0.0000	9.8000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3328	0.2422	4.1000e-004		0.0176	0.0176		0.0165	0.0165	0.0000	35.9727	35.9727	9.1800e-003	0.0000	36.2022
Total	**0.0346**	**0.3328**	**0.2422**	**4.1000e-004**	**9.8000e-004**	**0.0176**	**0.0186**	**1.5000e-004**	**0.0165**	**0.0166**	**0.0000**	**35.9727**	**35.9727**	**9.1800e-003**	**0.0000**	**36.2022**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.5100e-003	2.1300e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.4000e-004	1.4000e-004	3.0000e-005	1.7000e-004	0.0000	2.3069	2.3069	2.4000e-004	0.0000	2.3130
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	1.1700e-003	8.2000e-004	9.3000e-003	3.0000e-005	3.2900e-003	2.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	2.8505	2.8505	7.0000e-005	0.0000	2.8521
Total	**1.4000e-003**	**9.3300e-003**	**0.0114**	**5.0000e-005**	**3.8000e-003**	**5.0000e-005**	**3.8600e-003**	**1.0100e-003**	**5.0000e-005**	**1.0700e-003**	**0.0000**	**5.1574**	**5.1574**	**3.1000e-004**	**0.0000**	**5.1651**

3.3 Demolition - 2020

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					3.6000e-004	0.0000	3.6000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3328	0.2422	4.1000e-004		0.0176	0.0176		0.0165	0.0165	0.0000	35.9727	35.9727	9.1800e-003	0.0000	36.2022
Total	**0.0346**	**0.3328**	**0.2422**	**4.1000e-004**	**3.6000e-004**	**0.0176**	**0.0179**	**6.0000e-005**	**0.0165**	**0.0165**	**0.0000**	**35.9727**	**35.9727**	**9.1800e-003**	**0.0000**	**36.2022**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.5100e-003	2.1300e-003	2.0000e-005	4.8000e-004	3.0000e-005	5.1000e-004	1.3000e-004	3.0000e-005	1.6000e-004	0.0000	2.3069	2.3069	2.4000e-004	0.0000	2.3130
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	1.1700e-003	8.2000e-004	9.3000e-003	3.0000e-005	3.0400e-003	2.0000e-005	3.0600e-003	8.1000e-004	2.0000e-005	8.3000e-004	0.0000	2.8505	2.8505	7.0000e-005	0.0000	2.8521
Total	**1.4000e-003**	**9.3300e-003**	**0.0114**	**5.0000e-005**	**3.5200e-003**	**5.0000e-005**	**3.5700e-003**	**9.4000e-004**	**5.0000e-005**	**9.9000e-004**	**0.0000**	**5.1574**	**5.1574**	**3.1000e-004**	**0.0000**	**5.1651**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	0.0779	0.6859	0.6207	1.0600e-003		0.0365	0.0365		0.0347	0.0347	0.0000	90.5522	90.5522	0.0208	0.0000	91.0722
Total	**0.0779**	**0.6859**	**0.6207**	**1.0600e-003**		**0.0365**	**0.0365**		**0.0347**	**0.0347**	**0.0000**	**90.5522**	**90.5522**	**0.0208**	**0.0000**	**91.0722**

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	2.1400e-003	1.5000e-003	0.0171	6.0000e-005	6.0400e-003	4.0000e-005	6.0800e-003	1.6000e-003	4.0000e-005	1.6400e-003	0.0000	5.2259	5.2259	1.2000e-004	0.0000	5.2289
Total	**2.1400e-003**	**1.5000e-003**	**0.0171**	**6.0000e-005**	**6.0400e-003**	**4.0000e-005**	**6.0800e-003**	**1.6000e-003**	**4.0000e-005**	**1.6400e-003**	**0.0000**	**5.2259**	**5.2259**	**1.2000e-004**	**0.0000**	**5.2289**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	0.0779	0.6859	0.6207	1.0600e-003		0.0365	0.0365		0.0347	0.0347	0.0000	90.5521	90.5521	0.0208	0.0000	91.0721
Total	**0.0779**	**0.6859**	**0.6207**	**1.0600e-003**		**0.0365**	**0.0365**		**0.0347**	**0.0347**	**0.0000**	**90.5521**	**90.5521**	**0.0208**	**0.0000**	**91.0721**

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	2.1400e-003	1.5000e-003	0.0171	6.0000e-005	5.5700e-003	4.0000e-005	5.6100e-003	1.4900e-003	4.0000e-005	1.5300e-003	0.0000	5.2259	5.2259	1.2000e-004	0.0000	5.2289
Total	**2.1400e-003**	**1.5000e-003**	**0.0171**	**6.0000e-005**	**5.5700e-003**	**4.0000e-005**	**5.6100e-003**	**1.4900e-003**	**4.0000e-005**	**1.5300e-003**	**0.0000**	**5.2259**	**5.2259**	**1.2000e-004**	**0.0000**	**5.2289**

3.5 Pipeline Construction - 2020

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					0.1130	0.0000	0.1130	0.0621	0.0000	0.0621	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1019	0.9713	0.6960	1.2500e-003		0.0507	0.0507		0.0476	0.0476	0.0000	107.5015	107.5015	0.0264	0.0000	108.1605
Total	**0.1019**	**0.9713**	**0.6960**	**1.2500e-003**	**0.1130**	**0.0507**	**0.1637**	**0.0621**	**0.0476**	**0.1097**	**0.0000**	**107.5015**	**107.5015**	**0.0264**	**0.0000**	**108.1605**

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	3.8000e-004	0.0142	3.5500e-003	4.0000e-005	8.6000e-004	4.0000e-005	9.0000e-004	2.3000e-004	4.0000e-005	2.8000e-004	0.0000	3.8449	3.8449	4.1000e-004	0.0000	3.8550
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-003	2.7300e-003	0.0310	1.1000e-004	0.0110	7.0000e-005	0.0111	2.9200e-003	7.0000e-005	2.9800e-003	0.0000	9.5016	9.5016	2.2000e-004	0.0000	9.5070
Total	**4.2800e-003**	**0.0169**	**0.0346**	**1.5000e-004**	**0.0118**	**1.1000e-004**	**0.0120**	**3.1500e-003**	**1.1000e-004**	**3.2600e-003**	**0.0000**	**13.3465**	**13.3465**	**6.3000e-004**	**0.0000**	**13.3620**

3.5 Pipeline Construction - 2020

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					0.0419	0.0000	0.0419	0.0230	0.0000	0.0230	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1019	0.9713	0.6960	1.2500e-003		0.0507	0.0507		0.0476	0.0476	0.0000	107.5014	107.5014	0.0264	0.0000	108.1604
Total	**0.1019**	**0.9713**	**0.6960**	**1.2500e-003**	**0.0419**	**0.0507**	**0.0925**	**0.0230**	**0.0476**	**0.0706**	**0.0000**	**107.5014**	**107.5014**	**0.0264**	**0.0000**	**108.1604**

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	3.8000e-004	0.0142	3.5500e-003	4.0000e-005	8.0000e-004	4.0000e-005	8.4000e-004	2.2000e-004	4.0000e-005	2.6000e-004	0.0000	3.8449	3.8449	4.1000e-004	0.0000	3.8550
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-003	2.7300e-003	0.0310	1.1000e-004	0.0101	7.0000e-005	0.0102	2.7100e-003	7.0000e-005	2.7700e-003	0.0000	9.5016	9.5016	2.2000e-004	0.0000	9.5070
Total	**4.2800e-003**	**0.0169**	**0.0346**	**1.5000e-004**	**0.0109**	**1.1000e-004**	**0.0110**	**2.9300e-003**	**1.1000e-004**	**3.0300e-003**	**0.0000**	**13.3465**	**13.3465**	**6.3000e-004**	**0.0000**	**13.3620**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	0.0531	0.4677	0.4232	7.3000e-004		0.0249	0.0249		0.0237	0.0237	0.0000	61.7401	61.7401	0.0142	0.0000	62.0947
Total	**0.0531**	**0.4677**	**0.4232**	**7.3000e-004**		**0.0249**	**0.0249**		**0.0237**	**0.0237**	**0.0000**	**61.7401**	**61.7401**	**0.0142**	**0.0000**	**62.0947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9500e-003	1.3700e-003	0.0155	5.0000e-005	5.4900e-003	4.0000e-005	5.5300e-003	1.4600e-003	3.0000e-005	1.4900e-003	0.0000	4.7508	4.7508	1.1000e-004	0.0000	4.7535
Total	**1.9500e-003**	**1.3700e-003**	**0.0155**	**5.0000e-005**	**5.4900e-003**	**4.0000e-005**	**5.5300e-003**	**1.4600e-003**	**3.0000e-005**	**1.4900e-003**	**0.0000**	**4.7508**	**4.7508**	**1.1000e-004**	**0.0000**	**4.7535**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	0.0531	0.4677	0.4232	7.3000e-004		0.0249	0.0249		0.0237	0.0237	0.0000	61.7401	61.7401	0.0142	0.0000	62.0946
Total	**0.0531**	**0.4677**	**0.4232**	**7.3000e-004**		**0.0249**	**0.0249**		**0.0237**	**0.0237**	**0.0000**	**61.7401**	**61.7401**	**0.0142**	**0.0000**	**62.0946**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9500e-003	1.3700e-003	0.0155	5.0000e-005	5.0600e-003	4.0000e-005	5.1000e-003	1.3500e-003	3.0000e-005	1.3900e-003	0.0000	4.7508	4.7508	1.1000e-004	0.0000	4.7535
Total	**1.9500e-003**	**1.3700e-003**	**0.0155**	**5.0000e-005**	**5.0600e-003**	**4.0000e-005**	**5.1000e-003**	**1.3500e-003**	**3.0000e-005**	**1.3900e-003**	**0.0000**	**4.7508**	**4.7508**	**1.1000e-004**	**0.0000**	**4.7535**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	0.0340	0.2993	0.2708	4.6000e-004		0.0159	0.0159		0.0151	0.0151	0.0000	39.5137	39.5137	9.0800e-003	0.0000	39.7406
Total	**0.0340**	**0.2993**	**0.2708**	**4.6000e-004**		**0.0159**	**0.0159**		**0.0151**	**0.0151**	**0.0000**	**39.5137**	**39.5137**	**9.0800e-003**	**0.0000**	**39.7406**

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	9.4000e-004	6.6000e-004	7.4400e-003	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.2804	2.2804	5.0000e-005	0.0000	2.2817
Total	**9.4000e-004**	**6.6000e-004**	**7.4400e-003**	**3.0000e-005**	**2.6300e-003**	**2.0000e-005**	**2.6500e-003**	**7.0000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.2804**	**2.2804**	**5.0000e-005**	**0.0000**	**2.2817**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	0.0340	0.2993	0.2708	4.6000e-004		0.0159	0.0159		0.0151	0.0151	0.0000	39.5136	39.5136	9.0800e-003	0.0000	39.7406
Total	**0.0340**	**0.2993**	**0.2708**	**4.6000e-004**		**0.0159**	**0.0159**		**0.0151**	**0.0151**	**0.0000**	**39.5136**	**39.5136**	**9.0800e-003**	**0.0000**	**39.7406**

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	9.4000e-004	6.6000e-004	7.4400e-003	3.0000e-005	2.4300e-003	2.0000e-005	2.4500e-003	6.5000e-004	2.0000e-005	6.7000e-004	0.0000	2.2804	2.2804	5.0000e-005	0.0000	2.2817
Total	**9.4000e-004**	**6.6000e-004**	**7.4400e-003**	**3.0000e-005**	**2.4300e-003**	**2.0000e-005**	**2.4500e-003**	**6.5000e-004**	**2.0000e-005**	**6.7000e-004**	**0.0000**	**2.2804**	**2.2804**	**5.0000e-005**	**0.0000**	**2.2817**

3.7 Well Equipping and Building Construction (Only-2) - 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	1.3000e-003	0.0114	0.0112	2.0000e-005		5.8000e-004	5.8000e-004		5.5000e-004	5.5000e-004	0.0000	1.6464	1.6464	3.7000e-004	0.0000	1.6557
Total	**1.3000e-003**	**0.0114**	**0.0112**	**2.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.6464**	**1.6464**	**3.7000e-004**	**0.0000**	**1.6557**

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	4.0000e-005	2.0000e-005	2.9000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0917	0.0917	0.0000	0.0000	0.0918
Total	**4.0000e-005**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0917**	**0.0917**	**0.0000**	**0.0000**	**0.0918**

3.7 Well Equipping and Building Construction (Only-2) - 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	1.3000e-003	0.0114	0.0112	2.0000e-005		5.8000e-004	5.8000e-004		5.5000e-004	5.5000e-004	0.0000	1.6464	1.6464	3.7000e-004	0.0000	1.6557
Total	**1.3000e-003**	**0.0114**	**0.0112**	**2.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**1.6464**	**1.6464**	**3.7000e-004**	**0.0000**	**1.6557**

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	4.0000e-005	2.0000e-005	2.9000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0917	0.0917	0.0000	0.0000	0.0918
Total	**4.0000e-005**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0917**	**0.0917**	**0.0000**	**0.0000**	**0.0918**

3.8 Testing - 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	0.0265	0.2560	0.2331	4.3000e-004		0.0125	0.0125		0.0120	0.0120	0.0000	37.2860	37.2860	7.1100e-003	0.0000	37.4637
Total	**0.0265**	**0.2560**	**0.2331**	**4.3000e-004**		**0.0125**	**0.0125**		**0.0120**	**0.0120**	**0.0000**	**37.2860**	**37.2860**	**7.1100e-003**	**0.0000**	**37.4637**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	7.4000e-004	8.6200e-003	3.0000e-005	3.2900e-003	2.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.7516	2.7516	6.0000e-005	0.0000	2.7530
Total	**1.1000e-003**	**7.4000e-004**	**8.6200e-003**	**3.0000e-005**	**3.2900e-003**	**2.0000e-005**	**3.3200e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.7516**	**2.7516**	**6.0000e-005**	**0.0000**	**2.7530**

3.8 Testing - 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	0.0265	0.2560	0.2331	4.3000e-004		0.0125	0.0125		0.0120	0.0120	0.0000	37.2859	37.2859	7.1100e-003	0.0000	37.4636
Total	**0.0265**	**0.2560**	**0.2331**	**4.3000e-004**		**0.0125**	**0.0125**		**0.0120**	**0.0120**	**0.0000**	**37.2859**	**37.2859**	**7.1100e-003**	**0.0000**	**37.4636**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	7.4000e-004	8.6200e-003	3.0000e-005	3.0400e-003	2.0000e-005	3.0600e-003	8.1000e-004	2.0000e-005	8.3000e-004	0.0000	2.7516	2.7516	6.0000e-005	0.0000	2.7530
Total	**1.1000e-003**	**7.4000e-004**	**8.6200e-003**	**3.0000e-005**	**3.0400e-003**	**2.0000e-005**	**3.0600e-003**	**8.1000e-004**	**2.0000e-005**	**8.3000e-004**	**0.0000**	**2.7516**	**2.7516**	**6.0000e-005**	**0.0000**	**2.7530**

3.9 Final Site Improvements - 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	0.0396	0.3702	0.4186	6.5000e-004		0.0208	0.0208		0.0196	0.0196	0.0000	56.5395	56.5395	0.0133	0.0000	56.8713
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0396**	**0.3702**	**0.4186**	**6.5000e-004**		**0.0208**	**0.0208**		**0.0196**	**0.0196**	**0.0000**	**56.5395**	**56.5395**	**0.0133**	**0.0000**	**56.8713**

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	7.3000e-004	4.9000e-004	5.7500e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2100e-003	5.8000e-004	1.0000e-005	6.0000e-004	0.0000	1.8344	1.8344	4.0000e-005	0.0000	1.8354
Total	**7.3000e-004**	**4.9000e-004**	**5.7500e-003**	**2.0000e-005**	**2.2000e-003**	**1.0000e-005**	**2.2100e-003**	**5.8000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**1.8344**	**1.8344**	**4.0000e-005**	**0.0000**	**1.8354**

3.9 Final Site Improvements - 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	0.0396	0.3702	0.4186	6.5000e-004		0.0208	0.0208		0.0196	0.0196	0.0000	56.5394	56.5394	0.0133	0.0000	56.8712
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0396**	**0.3702**	**0.4186**	**6.5000e-004**		**0.0208**	**0.0208**		**0.0196**	**0.0196**	**0.0000**	**56.5394**	**56.5394**	**0.0133**	**0.0000**	**56.8712**

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	7.3000e-004	4.9000e-004	5.7500e-003	2.0000e-005	2.0200e-003	1.0000e-005	2.0400e-003	5.4000e-004	1.0000e-005	5.5000e-004	0.0000	1.8344	1.8344	4.0000e-005	0.0000	1.8354
Total	**7.3000e-004**	**4.9000e-004**	**5.7500e-003**	**2.0000e-005**	**2.0200e-003**	**1.0000e-005**	**2.0400e-003**	**5.4000e-004**	**1.0000e-005**	**5.5000e-004**	**0.0000**	**1.8344**	**1.8344**	**4.0000e-005**	**0.0000**	**1.8354**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

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	3.0816	3.0816	1.3000e-004	3.0000e-005	3.0926
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.0816	3.0816	1.3000e-004	3.0000e-005	3.0926
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	9671.64	3.0816	1.3000e-004	3.0000e-005	3.0926
Total		**3.0816**	**1.3000e-004**	**3.0000e-005**	**3.0926**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	9671.64	3.0816	1.3000e-004	3.0000e-005	3.0926
Total		**3.0816**	**1.3000e-004**	**3.0000e-005**	**3.0926**

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	4.0600e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	4.0600e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**4.0500e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**4.0500e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	536.5656	0.0222	4.5800e-003	538.4852
Unmitigated	536.5656	0.0222	4.5800e-003	538.4852

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 1314	536.5656	0.0222	4.5800e-003	538.4852
Total		**536.5656**	**0.0222**	**4.5800e-003**	**538.4852**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 1314	536.5656	0.0222	4.5800e-003	538.4852
Total		**536.5656**	**0.0222**	**4.5800e-003**	**538.4852**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Air Compressors	1	8.00	20	78	0.48	Diesel
Generator Sets	1	8.00	20	84	0.74	Diesel

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					
Air Compressors	2.9200e-003	0.0204	0.0242	4.0000e-005		1.2500e-003	1.2500e-003		1.2500e-003	1.2500e-003	0.0000	3.4043	3.4043	2.3000e-004	0.0000	3.4102
Generator Sets	3.5700e-003	0.0317	0.0369	7.0000e-005		1.6800e-003	1.6800e-003		1.6800e-003	1.6800e-003	0.0000	5.6521	5.6521	2.9000e-004	0.0000	5.6593
Total	**6.4900e-003**	**0.0520**	**0.0611**	**1.1000e-004**		**2.9300e-003**	**2.9300e-003**		**2.9300e-003**	**2.9300e-003**	**0.0000**	**9.0564**	**9.0564**	**5.2000e-004**	**0.0000**	**9.0695**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

This page intentionally left blank

Santa Ana Well #32 Rehabilitation

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.36	1,122.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Santa Ana Well #32 Rehabilitation - Orange County, Summer

Project Characteristics -

Land Use - Well Construction Footprint = 0.45 acres
Pipeline Construction Footprint = 1.91 acres (3475 ft. length of pipeline x 24 ft. wide workspace)
TOTAL = 2.36 acres
Building footprint = 1,122 SF (Well building = 809 SF, Chemical building = 313 SF)

Construction Phase - Construction phases and schedule provided by client

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Trips and VMT - Conservative assumptions for worker trips/day and total hauling trips

Demolition - Includes existing Well No. 32 limits of demolition and existing concrete sidewalk and driveway to be removed and disposed

Grading - Pipeline trenching (3475 ft x 2.5 ft trench)

Land Use Change -

Construction Off-road Equipment Mitigation - CEQA Handbook Table XI-C Mitigation Measures Fugitive Dust from Paved Roads

Operational Off-Road Equipment - Acid washing (monthly - 12), thorough cleaning (annually - 1), hose replacement (quarterly - 4), cell replacement (every 7-10 years, 3 days)

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	561	0
tblAreaCoating	Area_Nonresidential_Interior	1683	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	55.00
tblConstructionPhase	NumDays	220.00	50.00
tblConstructionPhase	NumDays	220.00	25.00
tblConstructionPhase	NumDays	20.00	30.00

tblConstructionPhase	NumDays	6.00	50.00
tblConstructionPhase	NumDays	10.00	40.00
tblEnergyUse	LightingElect	0.00	3.08
tblEnergyUse	NT24E	0.00	3.83
tblEnergyUse	T24E	0.00	1.71
tblGrading	AcresOfGrading	18.75	0.20
tblLandUse	LandUseSquareFeet	0.00	1,122.00
tblLandUse	LotAcreage	0.00	2.36
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00

tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	9.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	100.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	45.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	1,243.30
tblWater	ElectricityIntensityFactorToTreat	111.00	38.30
tblWater	OutdoorWaterUseRate	0.00	1,314,000,000.00

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					
2020	6.4465	58.2528	46.8691	0.0870	5.2263	3.0288	8.2551	2.6705	2.8573	5.5279	0.0000	8,286.9155	8,286.9155	1.8202	0.0000	8,332.4202
2021	3.3959	31.3611	33.3439	0.0568	0.2794	1.6634	1.9429	0.0741	1.5792	1.6533	0.0000	5,434.2908	5,434.2908	1.1288	0.0000	5,462.5110
Maximum	**6.4465**	**58.2528**	**46.8691**	**0.0870**	**5.2263**	**3.0288**	**8.2551**	**2.6705**	**2.8573**	**5.5279**	**0.0000**	**8,286.9155**	**8,286.9155**	**1.8202**	**0.0000**	**8,332.4202**

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					
2020	6.4465	58.2528	46.8691	0.0870	2.3256	3.0288	5.3544	1.0939	2.8573	3.9513	0.0000	8,286.9155	8,286.9155	1.8202	0.0000	8,332.4202
2021	3.3959	31.3611	33.3439	0.0568	0.2576	1.6634	1.9210	0.0688	1.5792	1.6479	0.0000	5,434.2908	5,434.2908	1.1288	0.0000	5,462.5110
Maximum	**6.4465**	**58.2528**	**46.8691**	**0.0870**	**2.3256**	**3.0288**	**5.3544**	**1.0939**	**2.8573**	**3.9513**	**0.0000**	**8,286.9155**	**8,286.9155**	**1.8202**	**0.0000**	**8,332.4202**

	ROG	NOx	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**	**53.08**	**0.00**	**28.66**	**57.64**	**0.00**	**22.03**	**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	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	0.6493	5.2020	6.1081	0.0105		0.2932	0.2932		0.2932	0.2932		998.2986	998.2986	0.0576		999.7373
Total	**0.6715**	**5.2020**	**6.1082**	**0.0105**	**0.0000**	**0.2932**	**0.2932**	**0.0000**	**0.2932**	**0.2932**		**998.2989**	**998.2989**	**0.0576**	**0.0000**	**999.7375**

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	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	0.6493	5.2020	6.1081	0.0105		0.2932	0.2932		0.2932	0.2932		998.2986	998.2986	0.0576		999.7373
Total	**0.6715**	**5.2020**	**6.1082**	**0.0105**	**0.0000**	**0.2932**	**0.2932**	**0.0000**	**0.2932**	**0.2932**		**998.2989**	**998.2989**	**0.0576**	**0.0000**	**999.7375**

	ROG	NOx	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

Santa Ana Well #32 Rehabilitation - Orange County, Summer

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Rehabilitation	Trenching	3/2/2020	5/22/2020	5	60	
2	Demolition	Demolition	5/25/2020	7/3/2020	5	30	
3	Well Equipping and Building Construction (Only-1)	Building Construction	7/6/2020	9/18/2020	5	55	
4	Pipeline Construction	Grading	9/21/2020	11/27/2020	5	50	
5	Well Equipping and Building Construction (Overlap)	Building Construction	9/21/2020	11/27/2020	5	50	
6	Well Equipping and Building Construction (Only-2)	Building Construction	11/30/2020	1/1/2021	5	25	
7	Testing	Trenching	1/4/2021	2/26/2021	5	40	
8	Final Site Improvements	Paving	1/4/2021	2/26/2021	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Rehabilitation	Air Compressors	1	8.00	78	0.48
Well Rehabilitation	Cranes	1	8.00	231	0.29
Well Rehabilitation	Forklifts	1	8.00	89	0.20
Well Rehabilitation	Generator Sets	1	8.00	84	0.74
Well Rehabilitation	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Dumpers/Tenders	2	8.00	16	0.38
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-1)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-1)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-1)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-1)	Excavators	1	8.00	158	0.38
Well Equipping and Building Construction (Only-1)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-1)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-1)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-1)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-1)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-1)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Welders	1	8.00	46	0.45
Pipeline Construction	Air Compressors	1	6.00	78	0.48
Pipeline Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Pipeline Construction	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline Construction	Cranes	1	6.00	231	0.29
Pipeline Construction	Dumpers/Tenders	2	6.00	16	0.38
Pipeline Construction	Excavators	1	6.00	158	0.38
Pipeline Construction	Forklifts	1	6.00	89	0.20
Pipeline Construction	Generator Sets	1	6.00	84	0.74
Pipeline Construction	Graders	1	6.00	187	0.41
Pipeline Construction	Pavers	1	6.00	130	0.42

Pipeline Construction	Plate Compactors	1	6.00	8	0.43
Pipeline Construction	Rollers	1	6.00	80	0.38
Pipeline Construction	Rubber Tired Dozers	1	6.00	247	0.40
Pipeline Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline Construction	Trenchers	1	6.00	78	0.50
Pipeline Construction	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Overlap)	Air Compressors	1	6.00	78	0.48
Well Equipping and Building Construction (Overlap)	Cement and Mortar Mixers	1	6.00	9	0.56
Well Equipping and Building Construction (Overlap)	Cranes	1	6.00	231	0.29
Well Equipping and Building Construction (Overlap)	Dumpers/Tenders	2	6.00	16	0.38
Well Equipping and Building Construction (Overlap)	Excavators	1	6.00	158	0.38
Well Equipping and Building Construction (Overlap)	Forklifts	1	6.00	89	0.20
Well Equipping and Building Construction (Overlap)	Generator Sets	1	6.00	84	0.74
Well Equipping and Building Construction (Overlap)	Pavers	1	6.00	130	0.42
Well Equipping and Building Construction (Overlap)	Plate Compactors	1	6.00	8	0.43
Well Equipping and Building Construction (Overlap)	Rollers	1	6.00	80	0.38
Well Equipping and Building Construction (Overlap)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Well Equipping and Building Construction (Overlap)	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Only-2)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-2)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-2)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-2)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-2)	Excavators	1	8.00	158	0.38

Well Equipping and Building Construction (Only-2)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-2)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-2)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-2)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-2)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-2)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-2)	Welders	1	8.00	46	0.45
Testing	Aerial Lifts	1	8.00	63	0.31
Testing	Air Compressors	1	8.00	78	0.48
Testing	Cranes	1	8.00	231	0.29
Testing	Generator Sets	1	8.00	84	0.74
Testing	Plate Compactors	1	8.00	8	0.43
Testing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Final Site Improvements	Aerial Lifts	1	8.00	63	0.31
Final Site Improvements	Air Compressors	1	8.00	78	0.48
Final Site Improvements	Cement and Mortar Mixers	1	8.00	9	0.56
Final Site Improvements	Generator Sets	1	8.00	84	0.74
Final Site Improvements	Pavers	1	8.00	130	0.42
Final Site Improvements	Paving Equipment	1	8.00	132	0.36
Final Site Improvements	Rollers	2	8.00	80	0.38
Final Site Improvements	Sweepers/Scrubbers	1	8.00	64	0.46
Final Site Improvements	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Well Rehabilitation	5	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	7	20.00	0.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	18	40.00	0.00	100.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Testing	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Final Site Improvements	10	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Well Rehabilitation - 2020

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	1.6615	13.9841	11.2101	0.0204		0.7500	0.7500		0.7245	0.7245		1,912.5968	1,912.5968	0.3234		1,920.6819
Total	**1.6615**	**13.9841**	**11.2101**	**0.0204**		**0.7500**	**0.7500**		**0.7245**	**0.7245**		**1,912.5968**	**1,912.5968**	**0.3234**		**1,920.6819**

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	0.0576	0.0363	0.4910	1.6400e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.0576**	**0.0363**	**0.4910**	**1.6400e-003**	**0.1677**	**1.1100e-003**	**0.1688**	**0.0445**	**1.0200e-003**	**0.0455**		**163.5065**	**163.5065**	**3.7300e-003**		**163.5997**

3.2 Well Rehabilitation - 2020

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	1.6615	13.9841	11.2101	0.0204		0.7500	0.7500		0.7245	0.7245	0.0000	1,912.5968	1,912.5968	0.3234		1,920.6819
Total	**1.6615**	**13.9841**	**11.2101**	**0.0204**		**0.7500**	**0.7500**		**0.7245**	**0.7245**	**0.0000**	**1,912.5968**	**1,912.5968**	**0.3234**		**1,920.6819**

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	0.0576	0.0363	0.4910	1.6400e-003	0.1546	1.1100e-003	0.1557	0.0413	1.0200e-003	0.0423		163.5065	163.5065	3.7300e-003		163.5997
Total	**0.0576**	**0.0363**	**0.4910**	**1.6400e-003**	**0.1546**	**1.1100e-003**	**0.1557**	**0.0413**	**1.0200e-003**	**0.0423**		**163.5065**	**163.5065**	**3.7300e-003**		**163.5997**

3.3 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0656	0.0000	0.0656	9.9400e-003	0.0000	9.9400e-003			0.0000			0.0000
Off-Road	2.3086	22.1837	16.1470	0.0277		1.1716	1.1716		1.0966	1.0966		2,643.5432	2,643.5432	0.6745		2,660.4058
Total	**2.3086**	**22.1837**	**16.1470**	**0.0277**	**0.0656**	**1.1716**	**1.2372**	**9.9400e-003**	**1.0966**	**1.1065**		**2,643.5432**	**2,643.5432**	**0.6745**		**2,660.4058**

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	0.0151	0.5499	0.1390	1.5300e-003	0.0348	1.7800e-003	0.0366	9.5300e-003	1.7000e-003	0.0112		170.6116	170.6116	0.0177		171.0537
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	0.0769	0.0484	0.6547	2.1900e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0920**	**0.5984**	**0.7936**	**3.7200e-003**	**0.2584**	**3.2600e-003**	**0.2616**	**0.0688**	**3.0600e-003**	**0.0719**		**388.6203**	**388.6203**	**0.0227**		**389.1867**

3.3 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0243	0.0000	0.0243	3.6800e-003	0.0000	3.6800e-003			0.0000			0.0000
Off-Road	2.3086	22.1837	16.1470	0.0277		1.1716	1.1716		1.0966	1.0966	0.0000	2,643.5432	2,643.5432	0.6745		2,660.4058
Total	**2.3086**	**22.1837**	**16.1470**	**0.0277**	**0.0243**	**1.1716**	**1.1959**	**3.6800e-003**	**1.0966**	**1.1003**	**0.0000**	**2,643.5432**	**2,643.5432**	**0.6745**		**2,660.4058**

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	0.0151	0.5499	0.1390	1.5300e-003	0.0324	1.7800e-003	0.0342	8.9500e-003	1.7000e-003	0.0107		170.6116	170.6116	0.0177		171.0537
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	0.0769	0.0484	0.6547	2.1900e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0920**	**0.5984**	**0.7936**	**3.7200e-003**	**0.2385**	**3.2600e-003**	**0.2418**	**0.0639**	**3.0600e-003**	**0.0670**		**388.6203**	**388.6203**	**0.0227**		**389.1867**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617		3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**		**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617	0.0000	3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**	**0.0000**	**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.5 Pipeline Construction - 2020

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					4.5208	0.0000	4.5208	2.4831	0.0000	2.4831			0.0000			0.0000
Off-Road	4.0765	38.8506	27.8388	0.0499		2.0261	2.0261		1.9053	1.9053		4,740.0038	4,740.0038	1.1623		4,769.0609
Total	**4.0765**	**38.8506**	**27.8388**	**0.0499**	**4.5208**	**2.0261**	**6.5469**	**2.4831**	**1.9053**	**4.3884**		**4,740.0038**	**4,740.0038**	**1.1623**		**4,769.0609**

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	0.0151	0.5499	0.1390	1.5300e-003	0.0348	1.7800e-003	0.0366	9.5300e-003	1.7000e-003	0.0112		170.6116	170.6116	0.0177		171.0537
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	0.1537	0.0968	1.3093	4.3700e-003	0.4471	2.9600e-003	0.4501	0.1186	2.7200e-003	0.1213		436.0174	436.0174	9.9400e-003		436.2659
Total	**0.1688**	**0.6468**	**1.4483**	**5.9000e-003**	**0.4819**	**4.7400e-003**	**0.4867**	**0.1281**	**4.4200e-003**	**0.1325**		**606.6290**	**606.6290**	**0.0276**		**607.3196**

3.5 Pipeline Construction - 2020

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					1.6750	0.0000	1.6750	0.9200	0.0000	0.9200			0.0000			0.0000
Off-Road	4.0765	38.8506	27.8388	0.0499		2.0261	2.0261		1.9053	1.9053	0.0000	4,740.0038	4,740.0038	1.1623		4,769.0609
Total	**4.0765**	**38.8506**	**27.8388**	**0.0499**	**1.6750**	**2.0261**	**3.7010**	**0.9200**	**1.9053**	**2.8253**	**0.0000**	**4,740.0038**	**4,740.0038**	**1.1623**		**4,769.0609**

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	0.0151	0.5499	0.1390	1.5300e-003	0.0324	1.7800e-003	0.0342	8.9500e-003	1.7000e-003	0.0107		170.6116	170.6116	0.0177		171.0537
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	0.1537	0.0968	1.3093	4.3700e-003	0.4121	2.9600e-003	0.4151	0.1100	2.7200e-003	0.1127		436.0174	436.0174	9.9400e-003		436.2659
Total	**0.1688**	**0.6468**	**1.4483**	**5.9000e-003**	**0.4446**	**4.7400e-003**	**0.4493**	**0.1189**	**4.4200e-003**	**0.1234**		**606.6290**	**606.6290**	**0.0276**		**607.3196**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	2.1244	18.7070	16.9274	0.0290		0.9965	0.9965		0.9463	0.9463		2,722.2740	2,722.2740	0.6253		2,737.9067
Total	**2.1244**	**18.7070**	**16.9274**	**0.0290**		**0.9965**	**0.9965**		**0.9463**	**0.9463**		**2,722.2740**	**2,722.2740**	**0.6253**		**2,737.9067**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	2.1244	18.7070	16.9274	0.0290		0.9965	0.9965		0.9463	0.9463	0.0000	2,722.2740	2,722.2740	0.6253		2,737.9067
Total	**2.1244**	**18.7070**	**16.9274**	**0.0290**		**0.9965**	**0.9965**		**0.9463**	**0.9463**	**0.0000**	**2,722.2740**	**2,722.2740**	**0.6253**		**2,737.9067**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617		3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**		**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617	0.0000	3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**	**0.0000**	**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0769	0.0484	0.6547	2.1900e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		218.0087	218.0087	4.9700e-003		218.1330
Total	**0.0769**	**0.0484**	**0.6547**	**2.1900e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**218.0087**	**218.0087**	**4.9700e-003**		**218.1330**

3.7 Well Equipping and Building Construction (Only-2) - 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	2.5921	22.8566	22.3154	0.0387		1.1662	1.1662		1.1070	1.1070		3,629.6641	3,629.6641	0.8235		3,650.2515
Total	**2.5921**	**22.8566**	**22.3154**	**0.0387**		**1.1662**	**1.1662**		**1.1070**	**1.1070**		**3,629.6641**	**3,629.6641**	**0.8235**		**3,650.2515**

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	0.0722	0.0437	0.6075	2.1100e-003	0.2236	1.4500e-003	0.2250	0.0593	1.3300e-003	0.0606		210.4388	210.4388	4.5100e-003		210.5515
Total	**0.0722**	**0.0437**	**0.6075**	**2.1100e-003**	**0.2236**	**1.4500e-003**	**0.2250**	**0.0593**	**1.3300e-003**	**0.0606**		**210.4388**	**210.4388**	**4.5100e-003**		**210.5515**

3.7 Well Equipping and Building Construction (Only-2) - 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	2.5921	22.8566	22.3154	0.0387		1.1662	1.1662		1.1070	1.1070	0.0000	3,629.6641	3,629.6641	0.8235		3,650.2515
Total	**2.5921**	**22.8566**	**22.3154**	**0.0387**		**1.1662**	**1.1662**		**1.1070**	**1.1070**	**0.0000**	**3,629.6641**	**3,629.6641**	**0.8235**		**3,650.2515**

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	0.0722	0.0437	0.6075	2.1100e-003	0.2061	1.4500e-003	0.2075	0.0550	1.3300e-003	0.0563		210.4388	210.4388	4.5100e-003		210.5515
Total	**0.0722**	**0.0437**	**0.6075**	**2.1100e-003**	**0.2061**	**1.4500e-003**	**0.2075**	**0.0550**	**1.3300e-003**	**0.0563**		**210.4388**	**210.4388**	**4.5100e-003**		**210.5515**

3.8 Testing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3270	12.7990	11.6557	0.0216		0.6231	0.6231		0.5975	0.5975		2,055.0367	2,055.0367	0.3917		2,064.8303
Total	**1.3270**	**12.7990**	**11.6557**	**0.0216**		**0.6231**	**0.6231**		**0.5975**	**0.5975**		**2,055.0367**	**2,055.0367**	**0.3917**		**2,064.8303**

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	0.0541	0.0328	0.4556	1.5800e-003	0.1677	1.0900e-003	0.1688	0.0445	1.0000e-003	0.0455		157.8291	157.8291	3.3800e-003		157.9136
Total	**0.0541**	**0.0328**	**0.4556**	**1.5800e-003**	**0.1677**	**1.0900e-003**	**0.1688**	**0.0445**	**1.0000e-003**	**0.0455**		**157.8291**	**157.8291**	**3.3800e-003**		**157.9136**

3.8 Testing - 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	1.3270	12.7990	11.6557	0.0216		0.6231	0.6231		0.5975	0.5975	0.0000	2,055.0367	2,055.0367	0.3917		2,064.8303
Total	**1.3270**	**12.7990**	**11.6557**	**0.0216**		**0.6231**	**0.6231**		**0.5975**	**0.5975**	**0.0000**	**2,055.0367**	**2,055.0367**	**0.3917**		**2,064.8303**

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	0.0541	0.0328	0.4556	1.5800e-003	0.1546	1.0900e-003	0.1556	0.0413	1.0000e-003	0.0422		157.8291	157.8291	3.3800e-003		157.9136
Total	**0.0541**	**0.0328**	**0.4556**	**1.5800e-003**	**0.1546**	**1.0900e-003**	**0.1556**	**0.0413**	**1.0000e-003**	**0.0422**		**157.8291**	**157.8291**	**3.3800e-003**		**157.9136**

3.9 Final Site Improvements - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9786	18.5075	20.9288	0.0326		1.0385	1.0385		0.9801	0.9801		3,116.2056	3,116.2056	0.7314		3,134.4913
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9786**	**18.5075**	**20.9288**	**0.0326**		**1.0385**	**1.0385**		**0.9801**	**0.9801**		**3,116.2056**	**3,116.2056**	**0.7314**		**3,134.4913**

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	0.0361	0.0218	0.3037	1.0600e-003	0.1118	7.2000e-004	0.1125	0.0296	6.7000e-004	0.0303		105.2194	105.2194	2.2500e-003		105.2758
Total	**0.0361**	**0.0218**	**0.3037**	**1.0600e-003**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.7000e-004**	**0.0303**		**105.2194**	**105.2194**	**2.2500e-003**		**105.2758**

3.9 Final Site Improvements - 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	1.9786	18.5075	20.9288	0.0326		1.0385	1.0385		0.9801	0.9801	0.0000	3,116.2056	3,116.2056	0.7314		3,134.4913
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9786**	**18.5075**	**20.9288**	**0.0326**		**1.0385**	**1.0385**		**0.9801**	**0.9801**	**0.0000**	**3,116.2056**	**3,116.2056**	**0.7314**		**3,134.4913**

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	0.0361	0.0218	0.3037	1.0600e-003	0.1030	7.2000e-004	0.1038	0.0275	6.7000e-004	0.0282		105.2194	105.2194	2.2500e-003		105.2758
Total	**0.0361**	**0.0218**	**0.3037**	**1.0600e-003**	**0.1030**	**7.2000e-004**	**0.1038**	**0.0275**	**6.7000e-004**	**0.0282**		**105.2194**	**105.2194**	**2.2500e-003**		**105.2758**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0222**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0222**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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
Air Compressors	1	8.00	20	78	0.48	Diesel
Generator Sets	1	8.00	20	84	0.74	Diesel

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					
Air Compressors	0.2919	2.0358	2.4234	3.9600e-003		0.1255	0.1255		0.1255	0.1255		375.2641	375.2641	0.0258		375.9079
Generator Sets	0.3574	3.1662	3.6847	6.5800e-003		0.1677	0.1677		0.1677	0.1677		623.0346	623.0346	0.0318		623.8294
Total	**0.6493**	**5.2020**	**6.1081**	**0.0105**		**0.2932**	**0.2932**		**0.2932**	**0.2932**		**998.2986**	**998.2986**	**0.0575**		**999.7373**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Santa Ana Well #32 Rehabilitation

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	2.36	1,122.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Santa Ana Well #32 Rehabilitation - Orange County, Winter

Project Characteristics -

Land Use - Well Construction Footprint = 0.45 acres
Pipeline Construction Footprint = 1.91 acres (3475 ft. length of pipeline x 24 ft. wide workspace)
TOTAL = 2.36 acres
Building footprint = 1,122 SF (Well building = 809 SF, Chemical building = 313 SF)

Construction Phase - Construction phases and schedule provided by client

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Off-road Equipment - Construction equipment per phase provided

Trips and VMT - Conservative assumptions for worker trips/day and total hauling trips

Demolition - Includes existing Well No. 32 limits of demolition and existing concrete sidewalk and driveway to be removed and disposed

Grading - Pipeline trenching (3475 ft x 2.5 ft trench)

Land Use Change -

Construction Off-road Equipment Mitigation - CEQA Handbook Table XI-C Mitigation Measures Fugitive Dust from Paved Roads

Operational Off-Road Equipment - Acid washing (monthly - 12), thorough cleaning (annually - 1), hose replacement (quarterly - 4), cell replacement (every 7-10 years, 3 days)

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	561	0
tblAreaCoating	Area_Nonresidential_Interior	1683	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	220.00	55.00
tblConstructionPhase	NumDays	220.00	50.00
tblConstructionPhase	NumDays	220.00	25.00
tblConstructionPhase	NumDays	20.00	30.00

tblConstructionPhase	NumDays	6.00	50.00
tblConstructionPhase	NumDays	10.00	40.00
tblEnergyUse	LightingElect	0.00	3.08
tblEnergyUse	NT24E	0.00	3.83
tblEnergyUse	T24E	0.00	1.71
tblGrading	AcresOfGrading	18.75	0.20
tblLandUse	LandUseSquareFeet	0.00	1,122.00
tblLandUse	LotAcreage	0.00	2.36
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00

tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	20.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	9.00	60.00
tblTripsAndVMT	HaulingTripNumber	0.00	100.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	45.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	25.00	10.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	1,243.30
tblWater	ElectricityIntensityFactorToTreat	111.00	38.30
tblWater	OutdoorWaterUseRate	0.00	1,314,000,000.00

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					
2020	6.4769	58.2741	46.7277	0.0867	5.2263	3.0289	8.2552	2.6705	2.8574	5.5279	0.0000	8,249.2864	8,249.2864	1.8198	0.0000	8,294.7820
2021	3.4078	31.3665	33.2852	0.0567	0.2794	1.6634	1.9429	0.0741	1.5792	1.6533	0.0000	5,420.2004	5,420.2004	1.1285	0.0000	5,448.4129
Maximum	**6.4769**	**58.2741**	**46.7277**	**0.0867**	**5.2263**	**3.0289**	**8.2552**	**2.6705**	**2.8574**	**5.5279**	**0.0000**	**8,249.2864**	**8,249.2864**	**1.8198**	**0.0000**	**8,294.7820**

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					
2020	6.4769	58.2741	46.7277	0.0867	2.3256	3.0289	5.3545	1.0939	2.8574	3.9513	0.0000	8,249.2864	8,249.2864	1.8198	0.0000	8,294.7820
2021	3.4078	31.3665	33.2852	0.0567	0.2576	1.6634	1.9210	0.0688	1.5792	1.6479	0.0000	5,420.2004	5,420.2004	1.1285	0.0000	5,448.4129
Maximum	**6.4769**	**58.2741**	**46.7277**	**0.0867**	**2.3256**	**3.0289**	**5.3545**	**1.0939**	**2.8574**	**3.9513**	**0.0000**	**8,249.2864**	**8,249.2864**	**1.8198**	**0.0000**	**8,294.7820**

	ROG	NOx	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**	**53.08**	**0.00**	**28.66**	**57.64**	**0.00**	**22.03**	**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	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	0.6493	5.2020	6.1081	0.0105		0.2932	0.2932		0.2932	0.2932		998.2986	998.2986	0.0576		999.7373
Total	**0.6715**	**5.2020**	**6.1082**	**0.0105**	**0.0000**	**0.2932**	**0.2932**	**0.0000**	**0.2932**	**0.2932**		**998.2989**	**998.2989**	**0.0576**	**0.0000**	**999.7375**

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	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Offroad	0.6493	5.2020	6.1081	0.0105		0.2932	0.2932		0.2932	0.2932		998.2986	998.2986	0.0576		999.7373
Total	**0.6715**	**5.2020**	**6.1082**	**0.0105**	**0.0000**	**0.2932**	**0.2932**	**0.0000**	**0.2932**	**0.2932**		**998.2989**	**998.2989**	**0.0576**	**0.0000**	**999.7375**

	ROG	NOx	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

Santa Ana Well #32 Rehabilitation - Orange County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Well Rehabilitation	Trenching	3/2/2020	5/22/2020	5	60	
2	Demolition	Demolition	5/25/2020	7/3/2020	5	30	
3	Well Equipping and Building Construction (Only-1)	Building Construction	7/6/2020	9/18/2020	5	55	
4	Pipeline Construction	Grading	9/21/2020	11/27/2020	5	50	
5	Well Equipping and Building Construction (Overlap)	Building Construction	9/21/2020	11/27/2020	5	50	
6	Well Equipping and Building Construction (Only-2)	Building Construction	11/30/2020	1/1/2021	5	25	
7	Testing	Trenching	1/4/2021	2/26/2021	5	40	
8	Final Site Improvements	Paving	1/4/2021	2/26/2021	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Rehabilitation	Air Compressors	1	8.00	78	0.48
Well Rehabilitation	Cranes	1	8.00	231	0.29
Well Rehabilitation	Forklifts	1	8.00	89	0.20
Well Rehabilitation	Generator Sets	1	8.00	84	0.74
Well Rehabilitation	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Dumpers/Tenders	2	8.00	16	0.38
Demolition	Excavators	1	8.00	158	0.38

Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-1)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-1)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-1)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-1)	Excavators	1	8.00	158	0.38
Well Equipping and Building Construction (Only-1)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-1)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-1)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-1)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-1)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-1)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-1)	Welders	1	8.00	46	0.45
Pipeline Construction	Air Compressors	1	6.00	78	0.48
Pipeline Construction	Cement and Mortar Mixers	1	6.00	9	0.56
Pipeline Construction	Concrete/Industrial Saws	1	6.00	81	0.73
Pipeline Construction	Cranes	1	6.00	231	0.29
Pipeline Construction	Dumpers/Tenders	2	6.00	16	0.38
Pipeline Construction	Excavators	1	6.00	158	0.38
Pipeline Construction	Forklifts	1	6.00	89	0.20
Pipeline Construction	Generator Sets	1	6.00	84	0.74
Pipeline Construction	Graders	1	6.00	187	0.41
Pipeline Construction	Pavers	1	6.00	130	0.42

Pipeline Construction	Plate Compactors	1	6.00	8	0.43
Pipeline Construction	Rollers	1	6.00	80	0.38
Pipeline Construction	Rubber Tired Dozers	1	6.00	247	0.40
Pipeline Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Pipeline Construction	Trenchers	1	6.00	78	0.50
Pipeline Construction	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Overlap)	Air Compressors	1	6.00	78	0.48
Well Equipping and Building Construction (Overlap)	Cement and Mortar Mixers	1	6.00	9	0.56
Well Equipping and Building Construction (Overlap)	Cranes	1	6.00	231	0.29
Well Equipping and Building Construction (Overlap)	Dumpers/Tenders	2	6.00	16	0.38
Well Equipping and Building Construction (Overlap)	Excavators	1	6.00	158	0.38
Well Equipping and Building Construction (Overlap)	Forklifts	1	6.00	89	0.20
Well Equipping and Building Construction (Overlap)	Generator Sets	1	6.00	84	0.74
Well Equipping and Building Construction (Overlap)	Pavers	1	6.00	130	0.42
Well Equipping and Building Construction (Overlap)	Plate Compactors	1	6.00	8	0.43
Well Equipping and Building Construction (Overlap)	Rollers	1	6.00	80	0.38
Well Equipping and Building Construction (Overlap)	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Well Equipping and Building Construction (Overlap)	Welders	1	6.00	46	0.45
Well Equipping and Building Construction (Only-2)	Air Compressors	1	8.00	78	0.48
Well Equipping and Building Construction (Only-2)	Cement and Mortar Mixers	1	8.00	9	0.56
Well Equipping and Building Construction (Only-2)	Cranes	1	8.00	231	0.29
Well Equipping and Building Construction (Only-2)	Dumpers/Tenders	2	8.00	16	0.38
Well Equipping and Building Construction (Only-2)	Excavators	1	8.00	158	0.38

Well Equipping and Building Construction (Only-2)	Forklifts	1	8.00	89	0.20
Well Equipping and Building Construction (Only-2)	Generator Sets	1	8.00	84	0.74
Well Equipping and Building Construction (Only-2)	Pavers	1	8.00	130	0.42
Well Equipping and Building Construction (Only-2)	Plate Compactors	1	8.00	8	0.43
Well Equipping and Building Construction (Only-2)	Rollers	1	8.00	80	0.38
Well Equipping and Building Construction (Only-2)	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping and Building Construction (Only-2)	Welders	1	8.00	46	0.45
Testing	Aerial Lifts	1	8.00	63	0.31
Testing	Air Compressors	1	8.00	78	0.48
Testing	Cranes	1	8.00	231	0.29
Testing	Generator Sets	1	8.00	84	0.74
Testing	Plate Compactors	1	8.00	8	0.43
Testing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Final Site Improvements	Aerial Lifts	1	8.00	63	0.31
Final Site Improvements	Air Compressors	1	8.00	78	0.48
Final Site Improvements	Cement and Mortar Mixers	1	8.00	9	0.56
Final Site Improvements	Generator Sets	1	8.00	84	0.74
Final Site Improvements	Pavers	1	8.00	130	0.42
Final Site Improvements	Paving Equipment	1	8.00	132	0.36
Final Site Improvements	Rollers	2	8.00	80	0.38
Final Site Improvements	Sweepers/Scrubbers	1	8.00	64	0.46
Final Site Improvements	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Well Rehabilitation	5	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	7	20.00	0.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	18	40.00	0.00	100.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping and Building Construction (	13	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Testing	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Final Site Improvements	10	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Well Rehabilitation - 2020

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	1.6615	13.9841	11.2101	0.0204		0.7500	0.7500		0.7245	0.7245		1,912.5968	1,912.5968	0.3234		1,920.6819
Total	**1.6615**	**13.9841**	**11.2101**	**0.0204**		**0.7500**	**0.7500**		**0.7245**	**0.7245**		**1,912.5968**	**1,912.5968**	**0.3234**		**1,920.6819**

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	0.0651	0.0399	0.4538	1.5500e-003	0.1677	1.1100e-003	0.1688	0.0445	1.0200e-003	0.0455		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.0651**	**0.0399**	**0.4538**	**1.5500e-003**	**0.1677**	**1.1100e-003**	**0.1688**	**0.0445**	**1.0200e-003**	**0.0455**		**154.7432**	**154.7432**	**3.5300e-003**		**154.8314**

3.2 Well Rehabilitation - 2020

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	1.6615	13.9841	11.2101	0.0204		0.7500	0.7500		0.7245	0.7245	0.0000	1,912.5968	1,912.5968	0.3234		1,920.6819
Total	**1.6615**	**13.9841**	**11.2101**	**0.0204**		**0.7500**	**0.7500**		**0.7245**	**0.7245**	**0.0000**	**1,912.5968**	**1,912.5968**	**0.3234**		**1,920.6819**

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	0.0651	0.0399	0.4538	1.5500e-003	0.1546	1.1100e-003	0.1557	0.0413	1.0200e-003	0.0423		154.7432	154.7432	3.5300e-003		154.8314
Total	**0.0651**	**0.0399**	**0.4538**	**1.5500e-003**	**0.1546**	**1.1100e-003**	**0.1557**	**0.0413**	**1.0200e-003**	**0.0423**		**154.7432**	**154.7432**	**3.5300e-003**		**154.8314**

3.3 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0656	0.0000	0.0656	9.9400e-003	0.0000	9.9400e-003			0.0000			0.0000
Off-Road	2.3086	22.1837	16.1470	0.0277		1.1716	1.1716		1.0966	1.0966		2,643.5432	2,643.5432	0.6745		2,660.4058
Total	**2.3086**	**22.1837**	**16.1470**	**0.0277**	**0.0656**	**1.1716**	**1.2372**	**9.9400e-003**	**1.0966**	**1.1065**		**2,643.5432**	**2,643.5432**	**0.6745**		**2,660.4058**

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	0.0155	0.5569	0.1463	1.5100e-003	0.0348	1.8100e-003	0.0366	9.5300e-003	1.7300e-003	0.0113		168.0360	168.0360	0.0181		168.4886
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	0.0869	0.0532	0.6051	2.0700e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.1023**	**0.6101**	**0.7514**	**3.5800e-003**	**0.2584**	**3.2900e-003**	**0.2617**	**0.0688**	**3.0900e-003**	**0.0719**		**374.3602**	**374.3602**	**0.0228**		**374.9305**

3.3 Demolition - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0243	0.0000	0.0243	3.6800e-003	0.0000	3.6800e-003			0.0000			0.0000
Off-Road	2.3086	22.1837	16.1470	0.0277		1.1716	1.1716		1.0966	1.0966	0.0000	2,643.5432	2,643.5432	0.6745		2,660.4058
Total	**2.3086**	**22.1837**	**16.1470**	**0.0277**	**0.0243**	**1.1716**	**1.1959**	**3.6800e-003**	**1.0966**	**1.1003**	**0.0000**	**2,643.5432**	**2,643.5432**	**0.6745**		**2,660.4058**

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	0.0155	0.5569	0.1463	1.5100e-003	0.0324	1.8100e-003	0.0343	8.9500e-003	1.7300e-003	0.0107		168.0360	168.0360	0.0181		168.4886
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	0.0869	0.0532	0.6051	2.0700e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.1023**	**0.6101**	**0.7514**	**3.5800e-003**	**0.2385**	**3.2900e-003**	**0.2418**	**0.0639**	**3.0900e-003**	**0.0670**		**374.3602**	**374.3602**	**0.0228**		**374.9305**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617		3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**		**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.4 Well Equipping and Building Construction (Only-1) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617	0.0000	3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**	**0.0000**	**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.5 Pipeline Construction - 2020

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					4.5208	0.0000	4.5208	2.4831	0.0000	2.4831			0.0000			0.0000
Off-Road	4.0765	38.8506	27.8388	0.0499		2.0261	2.0261		1.9053	1.9053		4,740.0038	4,740.0038	1.1623		4,769.0609
Total	**4.0765**	**38.8506**	**27.8388**	**0.0499**	**4.5208**	**2.0261**	**6.5469**	**2.4831**	**1.9053**	**4.3884**		**4,740.0038**	**4,740.0038**	**1.1623**		**4,769.0609**

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	0.0155	0.5569	0.1463	1.5100e-003	0.0348	1.8100e-003	0.0366	9.5300e-003	1.7300e-003	0.0113		168.0360	168.0360	0.0181		168.4886
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	0.1737	0.1064	1.2102	4.1400e-003	0.4471	2.9600e-003	0.4501	0.1186	2.7200e-003	0.1213		412.6485	412.6485	9.4100e-003		412.8838
Total	**0.1892**	**0.6633**	**1.3565**	**5.6500e-003**	**0.4819**	**4.7700e-003**	**0.4867**	**0.1281**	**4.4500e-003**	**0.1326**		**580.6844**	**580.6844**	**0.0275**		**581.3725**

3.5 Pipeline Construction - 2020

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					1.6750	0.0000	1.6750	0.9200	0.0000	0.9200			0.0000			0.0000
Off-Road	4.0765	38.8506	27.8388	0.0499		2.0261	2.0261		1.9053	1.9053	0.0000	4,740.0038	4,740.0038	1.1623		4,769.0609
Total	**4.0765**	**38.8506**	**27.8388**	**0.0499**	**1.6750**	**2.0261**	**3.7010**	**0.9200**	**1.9053**	**2.8253**	**0.0000**	**4,740.0038**	**4,740.0038**	**1.1623**		**4,769.0609**

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	0.0155	0.5569	0.1463	1.5100e-003	0.0324	1.8100e-003	0.0343	8.9500e-003	1.7300e-003	0.0107		168.0360	168.0360	0.0181		168.4886
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	0.1737	0.1064	1.2102	4.1400e-003	0.4121	2.9600e-003	0.4151	0.1100	2.7200e-003	0.1127		412.6485	412.6485	9.4100e-003		412.8838
Total	**0.1892**	**0.6633**	**1.3565**	**5.6500e-003**	**0.4446**	**4.7700e-003**	**0.4493**	**0.1189**	**4.4500e-003**	**0.1234**		**580.6844**	**580.6844**	**0.0275**		**581.3725**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	2.1244	18.7070	16.9274	0.0290		0.9965	0.9965		0.9463	0.9463		2,722.2740	2,722.2740	0.6253		2,737.9067
Total	**2.1244**	**18.7070**	**16.9274**	**0.0290**		**0.9965**	**0.9965**		**0.9463**	**0.9463**		**2,722.2740**	**2,722.2740**	**0.6253**		**2,737.9067**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.6 Well Equipping and Building Construction (Overlap) - 2020

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	2.1244	18.7070	16.9274	0.0290		0.9965	0.9965		0.9463	0.9463	0.0000	2,722.2740	2,722.2740	0.6253		2,737.9067
Total	**2.1244**	**18.7070**	**16.9274**	**0.0290**		**0.9965**	**0.9965**		**0.9463**	**0.9463**	**0.0000**	**2,722.2740**	**2,722.2740**	**0.6253**		**2,737.9067**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617		3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**		**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2236	1.4800e-003	0.2250	0.0593	1.3600e-003	0.0607		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2236**	**1.4800e-003**	**0.2250**	**0.0593**	**1.3600e-003**	**0.0607**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.7 Well Equipping and Building Construction (Only-2) - 2020

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	2.8325	24.9427	22.5698	0.0387		1.3287	1.3287		1.2617	1.2617	0.0000	3,629.6986	3,629.6986	0.8338		3,650.5423
Total	**2.8325**	**24.9427**	**22.5698**	**0.0387**		**1.3287**	**1.3287**		**1.2617**	**1.2617**	**0.0000**	**3,629.6986**	**3,629.6986**	**0.8338**		**3,650.5423**

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	0.0869	0.0532	0.6051	2.0700e-003	0.2061	1.4800e-003	0.2075	0.0550	1.3600e-003	0.0564		206.3242	206.3242	4.7100e-003		206.4419
Total	**0.0869**	**0.0532**	**0.6051**	**2.0700e-003**	**0.2061**	**1.4800e-003**	**0.2075**	**0.0550**	**1.3600e-003**	**0.0564**		**206.3242**	**206.3242**	**4.7100e-003**		**206.4419**

3.7 Well Equipping and Building Construction (Only-2) - 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	2.5921	22.8566	22.3154	0.0387		1.1662	1.1662		1.1070	1.1070		3,629.6641	3,629.6641	0.8235		3,650.2515
Total	**2.5921**	**22.8566**	**22.3154**	**0.0387**		**1.1662**	**1.1662**		**1.1070**	**1.1070**		**3,629.6641**	**3,629.6641**	**0.8235**		**3,650.2515**

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	0.0817	0.0480	0.5605	2.0000e-003	0.2236	1.4500e-003	0.2250	0.0593	1.3300e-003	0.0606		199.1664	199.1664	4.2600e-003		199.2731
Total	**0.0817**	**0.0480**	**0.5605**	**2.0000e-003**	**0.2236**	**1.4500e-003**	**0.2250**	**0.0593**	**1.3300e-003**	**0.0606**		**199.1664**	**199.1664**	**4.2600e-003**		**199.2731**

3.7 Well Equipping and Building Construction (Only-2) - 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	2.5921	22.8566	22.3154	0.0387		1.1662	1.1662		1.1070	1.1070	0.0000	3,629.6641	3,629.6641	0.8235		3,650.2515
Total	**2.5921**	**22.8566**	**22.3154**	**0.0387**		**1.1662**	**1.1662**		**1.1070**	**1.1070**	**0.0000**	**3,629.6641**	**3,629.6641**	**0.8235**		**3,650.2515**

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	0.0817	0.0480	0.5605	2.0000e-003	0.2061	1.4500e-003	0.2075	0.0550	1.3300e-003	0.0563		199.1664	199.1664	4.2600e-003		199.2731
Total	**0.0817**	**0.0480**	**0.5605**	**2.0000e-003**	**0.2061**	**1.4500e-003**	**0.2075**	**0.0550**	**1.3300e-003**	**0.0563**		**199.1664**	**199.1664**	**4.2600e-003**		**199.2731**

3.8 Testing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3270	12.7990	11.6557	0.0216		0.6231	0.6231		0.5975	0.5975		2,055.0367	2,055.0367	0.3917		2,064.8303
Total	**1.3270**	**12.7990**	**11.6557**	**0.0216**		**0.6231**	**0.6231**		**0.5975**	**0.5975**		**2,055.0367**	**2,055.0367**	**0.3917**		**2,064.8303**

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	0.0613	0.0360	0.4204	1.5000e-003	0.1677	1.0900e-003	0.1688	0.0445	1.0000e-003	0.0455		149.3748	149.3748	3.2000e-003		149.4548
Total	**0.0613**	**0.0360**	**0.4204**	**1.5000e-003**	**0.1677**	**1.0900e-003**	**0.1688**	**0.0445**	**1.0000e-003**	**0.0455**		**149.3748**	**149.3748**	**3.2000e-003**		**149.4548**

3.8 Testing - 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	1.3270	12.7990	11.6557	0.0216		0.6231	0.6231		0.5975	0.5975	0.0000	2,055.0367	2,055.0367	0.3917		2,064.8303
Total	**1.3270**	**12.7990**	**11.6557**	**0.0216**		**0.6231**	**0.6231**		**0.5975**	**0.5975**	**0.0000**	**2,055.0367**	**2,055.0367**	**0.3917**		**2,064.8303**

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	0.0613	0.0360	0.4204	1.5000e-003	0.1546	1.0900e-003	0.1556	0.0413	1.0000e-003	0.0422		149.3748	149.3748	3.2000e-003		149.4548
Total	**0.0613**	**0.0360**	**0.4204**	**1.5000e-003**	**0.1546**	**1.0900e-003**	**0.1556**	**0.0413**	**1.0000e-003**	**0.0422**		**149.3748**	**149.3748**	**3.2000e-003**		**149.4548**

3.9 Final Site Improvements - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9786	18.5075	20.9288	0.0326		1.0385	1.0385		0.9801	0.9801		3,116.2056	3,116.2056	0.7314		3,134.4913
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9786**	**18.5075**	**20.9288**	**0.0326**		**1.0385**	**1.0385**		**0.9801**	**0.9801**		**3,116.2056**	**3,116.2056**	**0.7314**		**3,134.4913**

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	0.0409	0.0240	0.2803	1.0000e-003	0.1118	7.2000e-004	0.1125	0.0296	6.7000e-004	0.0303		99.5832	99.5832	2.1300e-003		99.6365
Total	**0.0409**	**0.0240**	**0.2803**	**1.0000e-003**	**0.1118**	**7.2000e-004**	**0.1125**	**0.0296**	**6.7000e-004**	**0.0303**		**99.5832**	**99.5832**	**2.1300e-003**		**99.6365**

3.9 Final Site Improvements - 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	1.9786	18.5075	20.9288	0.0326		1.0385	1.0385		0.9801	0.9801	0.0000	3,116.2056	3,116.2056	0.7314		3,134.4913
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9786**	**18.5075**	**20.9288**	**0.0326**		**1.0385**	**1.0385**		**0.9801**	**0.9801**	**0.0000**	**3,116.2056**	**3,116.2056**	**0.7314**		**3,134.4913**

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	0.0409	0.0240	0.2803	1.0000e-003	0.1030	7.2000e-004	0.1038	0.0275	6.7000e-004	0.0282		99.5832	99.5832	2.1300e-003		99.6365
Total	**0.0409**	**0.0240**	**0.2803**	**1.0000e-003**	**0.1030**	**7.2000e-004**	**0.1038**	**0.0275**	**6.7000e-004**	**0.0282**		**99.5832**	**99.5832**	**2.1300e-003**		**99.6365**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.558976	0.043534	0.209821	0.113949	0.016111	0.005791	0.025447	0.016654	0.001713	0.001553	0.004896	0.000590	0.000966

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0222	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0222**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0222					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0222**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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
Air Compressors	1	8.00	20	78	0.48	Diesel
Generator Sets	1	8.00	20	84	0.74	Diesel

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					
Air Compressors	0.2919	2.0358	2.4234	3.9600e-003		0.1255	0.1255		0.1255	0.1255		375.2641	375.2641	0.0258		375.9079
Generator Sets	0.3574	3.1662	3.6847	6.5800e-003		0.1677	0.1677		0.1677	0.1677		623.0346	623.0346	0.0318		623.8294
Total	**0.6493**	**5.2020**	**6.1081**	**0.0105**		**0.2932**	**0.2932**		**0.2932**	**0.2932**		**998.2986**	**998.2986**	**0.0575**		**999.7373**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

CULTURAL RESOURCES

This page intentionally left blank

State of California ♉ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code | Reviewer | Date

Page 1 of 9 ***Resource Name or #:** (Assigned by recorder) Pipeline along N. Bristol Street
P1. Other Identifier:

P2. Location: ☐ **Not for Publication** ☒ **Unrestricted**
- ***a. County** Orange County **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
- ***b. USGS 7.5' Quad** Anaheim (CA) **Date** 1981 **T** ___; **R** ___; ___ ☐ **of** ___ ☐ **of Sec** ___; **B.M.**
- c. Address 2498-2454 N Bristol St City Santa Ana Zip 92706
- d. UTM: (Give more than one for large and/or linear resources) Zone 33.769482 / -117°53'05.6 mN
- e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The pipeline that is the subject of this form is comprised of an abandoned 18-inch cast iron water main that runs along N. Bristol Street for minimum of 1,000 feet before reaching the Santiago Creek crossing. At this point, the main, which has been buried the distance north of Santiago Creek, runs aboveground, affixed to the underside of the Bristol Street Bridge, for a distance of approximately 95 feet. (see Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP11. Engineering Structure

***P4. Resources Present:** ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) Photograph 1, Camera facing north, taken by Tetra Tech, June 13, 2019

***P6.Date Constructed/Age and Source**
☒ Historic ☐ Prehistoric ☐ Both
1954-1955, 1966/Santa Ana Public Works Agency

***P7. Owner and Address:**
Santa Ana Public Works
20 Civic Center Plaza, Santa Ana, CA 92701

***P8. Recorded by:** (Name, affiliation, and address)
Hannah Dye
Tetra Tech, Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612

***P9. Date Recorded:** 6/13/19

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") None

***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) Pipeline along N. Bristol Street t ***NRHP Status Code** 6Z

B1. Historic Name: None
B2. Common Name: None
B3. Original Use: Pipeline **B4. Present Use:** Pipeline
***B5. Architectural Style:** None
***B6. Construction History:** (Construction date, alterations, and date of alterations)

- Original construction – 1954
- Some segments constructed 1955 and 1966
- Abandoned in place –2002

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:** N/A

B9a. Architect: b. Builder:
***B10. Significance: Theme** N/A **Area** N/A
Period of Significance N/A **Property Type** N/A **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The water main has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and it does not meet the significance criteria as outlined in those guidelines. Therefore, it is not a historic resource under CEQA. The pipeline does not meet the criteria for listing in the National Register of Historic Places (NRHP) in accordance with 36 *Code of Federal Regulations* (CFR) Part 800 of the National Historic Preservation Act of 1966, as amended. (see Continuation Sheet).

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:** See footnotes.

B13. Remarks:
***B14. Evaluator:** Julia Mates
***Date of Evaluation:** July 1, 2019

(This space reserved for official comments.)

P3a. Description (Continued)

The main then returns below ground under Bristol Street south of the bridge. The original bridge over the creek was expanded in 2002, providing extra width for an additional pipe to be held under the bridge east of the 18-inch cast iron pipe. Thus, the bridge now holds a portion of the abandoned 1954 cast iron pipe and a new 24" cement mortar lined metal pipe, both above-ground.

B10. Significance (Continued)

City of Santa Ana

The City of Santa Ana is one of the oldest cities in Orange County incorporated in 1886. It encompasses 27.5 square miles and is in the heart of Orange County. It is rated the eleventh largest city in California with a population of over 325,000. It is located thirty-three miles south of Los Angeles and twelve miles inland from the Pacific Ocean. The Santa Ana River and its smaller tributary Santiago Creek are usually dry but are unpredictable in wet years.

The Santa Ana area was explored in 1769 by a Spanish expedition led by Gaspár de Portolá. After the expedition de Portolá, Friar Junípero Serra named the area Vallejo de Santa Ana (Valley of Saint Anne, or Santa Ana Valley). On November 1, 1776, Mission San Juan Capistrano was established within this valley. This Santa Ana Valley comprised most of what is now called Orange County (Pleasants 1931).

In 1810, year of the commencement of the war of Mexican Independence (1810–1821), Jose Antonio Yorba, a sergeant of the Spanish army, was granted land that he called Rancho Santiago de Santa Ana. Yorba's rancho included the lands where the cities of Olive, Orange, Irvine, Yorba Linda, Villa Park, Santa Ana, Tustin, Costa Mesa and unincorporated El Modena, and Santa Ana Heights, are today. This rancho was the only land grant in Orange County granted under Spanish Rule. Surrounding land grants in Orange County were granted after Mexican Independence by the new government (Pleasants 1931).

After the Mexican-American war ended in 1848, Alta California became part of the United States and American settlers arrived in this area. Santa Ana was listed as a township of Los Angeles County in the 1860 and 1870 census, with an area encompassing most of what is now northern and central Orange County. It had a population of 756 in 1860 and 880 in 1870 (Spitzzeri 1997).

The land that is present-day Santa Ana was claimed in 1869 by Kentuckian William H. Spurgeon on land obtained from the descendants of Jose Antonio Yorba. It was incorporated as a city in 1886 with a population of 2000 and in 1889 became the seat of the newly formed Orange County. The boundaries were: First Street at the south; West Street (now Broadway) at the west; Seventh Street at the north; and Spurgeon Street at the east (Goddard 1988).

B10. Significance (Continued)

City of Santa Ana Water Facilities and Orange County Water District

The town's water supply also began with Spurgeon. In 1869, his artesian well and small water tower supplied the residents' water (Goddard 1988). Today, from the U.S. Interstate-5 Freeway, a high Santa Ana water tower can be seen. It holds very little water and today is mainly a landmark. Now 30 percent of the city's water supply is stored underground; since 1928 the other seventy percent is a blend of California Aqueduct water and Colorado River water supplied by the Metropolitan Water District of Southern California (MWD).

Santa Ana was, for many years, a ranching community with some farming. To serve this growing agricultural and domestic community, a municipal water system was formed in 1886. The original source of water supply for the City was from shallow irrigation wells. As the City continued to grow and change from agriculture to an urban community, the need for additional sources of water was recognized if economic development were to continue (Tetra Tech 2017:17).

To tap into water sources from outside the area, the City joined with 12 other southern California cities to form and be an original member agency of the MWD on February 27, 1931. MWD, as a regional wholesaler, supplies imported water to Southern California from the Colorado River and from the State Water Project from Northern California (Tetra Tech 2017:17)

MWD's primary purpose is to develop, store and distribute water at wholesale rates to its member public agencies for domestic and municipal uses. In 1933, the Orange County Water District (OCWD) was formed by a special act of the State Legislature to manage Orange County's groundwater supply and protection of the County's rights to water in the Santa Ana River (Tetra Tech 2017: 17).

By the end of World War II, the City of Santa Ana, as well as the cities of Anaheim, Fullerton, and the Coastal Municipal Water District, had all connected to the MWD system and were receiving domestic water. Nevertheless, a 1945 study showed that approximately 123,500 acre-feet per year were still being pumped from the groundwater basin and was overdrawn by about 12,000 acre-feet per year. When groundwater was drawn down below sea level by this overdraft, seawater filtered into the coastal areas and threatened to pollute the entire groundwater basin. Several coastal wells had already been contaminated and abandoned, so the fear of contamination was warranted. It was imperative that OCWD act to replenish the groundwater basin, just to maintain the status quo (The Acorn Group 2014: 20).

Even more discouraging than the overdraft situation was the realization that Orange County might not have water available for industrial expansion. Without adequate water supplies, the county was limited in its ability to attract new industries first drawn to the county by the prospect of less expensive acreage. OCWD directors threatened that if the overdraft was not corrected, they would have to oppose postwar expansion and industrialization to protect the current water users (The Acorn Group 2014:20).

OCWD directors began to implement the recommendations of the 1945 study to improve the quantity and quality of the groundwater. Among the study programs were agreements with the California Department of Water Resources to sample and analyze the quality of water in the basin and to study evaporation and transpiration below the dam. Other

B10. Significance (Continued)

studies involved reclamation of wastewater and better irrigation techniques. OCWD maintenance crews proactively constructed barriers in the river to prevent channelization, thus allowing the percolation of water over a broader area of the river. Finally, OCWD encouraged other cities in the county to take more of their water directly from MWD and formed a committee to figure out how to increase the supply of imported water. In 1954, the City of Santa Ana became a member of OCWD (The Acorn Group 2014:20).

The construction of the water main along N. Bristol Street in Santa Ana in 1954 coincides with the beginning of the City's OCWD membership and likely reflects broader efforts of the OCWD to increase distribution of local well water of the Lower Santa Ana Groundwater Basin to meet the demands of post-war suburban residential and industrial expansion.

Today, the City's Water Enterprise provides water service within its 27.5-square mile service area. The service area includes the City of Santa Ana and a small neighborhood in the City of Orange, near Tustin Avenue and Fairhaven by the northeast corner of Santa Ana. The Water Enterprise serves residential, commercial, industrial, institutional and irrigation customers by providing potable and recycled water. To serve its customers, the Water Enterprise obtains water from two primary sources: local well water from the Lower Santa Ana River Groundwater Basin, also known as the Orange County Groundwater Basin (OC Basin), which is managed by OCWD; and imported water from MWD. Groundwater production accounts for roughly 70 to 75 percent of the water supply and MWD imported water supplies provide the remaining 25 to 30 percent. The City of Santa Ana Public Works Agency – Water Resources Division oversees and maintains the daily operations of the water system. The City's water system has an average demand of about 43 million gallons (MG) with approximately 45,000 services. It is comprised of approximately 480 miles of transmission and distribution mains, ten reservoirs with a storage capacity of 49 MG, seven pumping stations, 21 groundwater wells, four pressure regulating stations and seven import water connections. The City also receives recycled water after advanced treatment from the OCWD facility called Green Acres Project (Tetra Tech 2014:7).

Fourteen of the City Wells pump into surface reservoirs with booster stations pumping the water into the distribution system. The remaining seven wells pump directly into the City's distribution system. Water pumped from all of the wells has been naturally filtered as it passes through underlying aquifers of sand, gravel, and soil. This well water only requires disinfectant treatment for system distribution (Tetra Tech 2014:7).

The City also maintains seven imported water connections to receive water through MWD's Orange County and East Orange County Feeder pipelines. These seven metered connections, with a total capacity of 60,580 gallons per minute (gpm) transfer the imported water into the City's distribution system (Tetra Tech 2014:7).

Well No. 32 Rehabilitation Project

The segment of 18-inch pipeline that is the subject of this form was constructed in 1954. Although now abandoned, it appears to have been associated with the John Garthe Pump Station (Station), located on N Bristol Street approximately 96 feet southwest of the Bristol Street Bridge, which was originally constructed in 1954 and widened in 2002. The Station includes three storage reservoirs with a total storage of 15.8 MG fed by multiple groundwater wells (Well 18, Well 24, and Well 30) and a booster pump station that supplies water to the distribution system from the storage reservoirs (Tetra Tech 2014:9). When the Bristol Street bridge was widened, the original 1954-constructed

B10. Significance (Continued)

18-inch pipe was left in place at its original location under the bridge. A new 24-inch pipeline within the newly widened part of the bridge was constructed and put into use while the 18-inch pipeline was abandoned in place. Well 32 has been inactive since 2004 due to low operating efficiencies and high nitrate levels (Tetra Tech 2018:1). The booster pump station includes five pumps with a capacity of approximately 14,800 gpm. Two pumps are operated with variable frequency drives (motor starters) that are controlled by pressure of the discharge header pipe. The John Garthe Station operates in parallel with other major facilities including the Walnut Station and Low Zone Well 41 (Tetra Tech 2014:9).

Well No. 32 was constructed circa 1984 and is located on N. Westwood Avenue between Morrison Park and Spurgeon United Methodist Church (City of Santa Ana 2018). The 300 horsepower pump used in the well has a capacity to output up to 2,775 gpm (Tetra Tech 2014:16).

Evaluation

In order for a resource to be listed in the CRHR and NRHP, at least one significance criterion from 1 through 4 and A through D (respectively) must be met. The resource is evaluated below.

Under Criterion A, the pipeline is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local level. It was constructed in the mid-1950s with the beginning of the City's OCWD membership the broader efforts of the OCWD to increase distribution of local well water of the Lower Santa Ana Groundwater Basin to meet the demands of post-war suburban residential and industrial expansion. While increasing distribution of water to meet a growing population is important, most water mains and pipelines are constructed to distribute water to the communities they serve, and the available historic records do not indicate that this water main is importantly associated with this trend in Santa Ana history and it is currently not in use. Therefore, it is recommended not eligible for listing in the CRHR under Criterion 1 nor the NRHP under Criterion A.

Under Criterion B, the available historical records do not indicate that the pipeline is associated with the life of a person or persons important to our history at the state, local, or national level. The available historical data did not show that individuals associated with the pipeline have made significant contributions in his or her profession or group. It is therefore recommended not eligible for listing in the CRHR under Criterion 2 nor the NRHP under Criterion B.

Under Criterion C, the pipeline is not significant for its type, period, or method of construction nor was it the work of a master. It is a simple, 6-inch cast iron pipe that transitions to an 18-inch reinforced concrete pipe, used to transfer water over hundreds of feet. Its materials, construction, and engineering characteristics are common for pipelines constructed during the mid-twentieth century and similar examples of these ordinary pipelines are found throughout the region. The portion that is located under Bristol Street bridge has been abandoned in place and a larger pipe has been put into place since 2002. It is recommended not eligible for listing in the CRHR under Criterion 3 nor the NRHP under Criterion C.

Under Criterion D, in rare instances, structures can serve as sources of valuable information about historic construction materials or technologies and be significant under Criterion D. The pipeline does not appear to be a

B10. Significance (Continued)

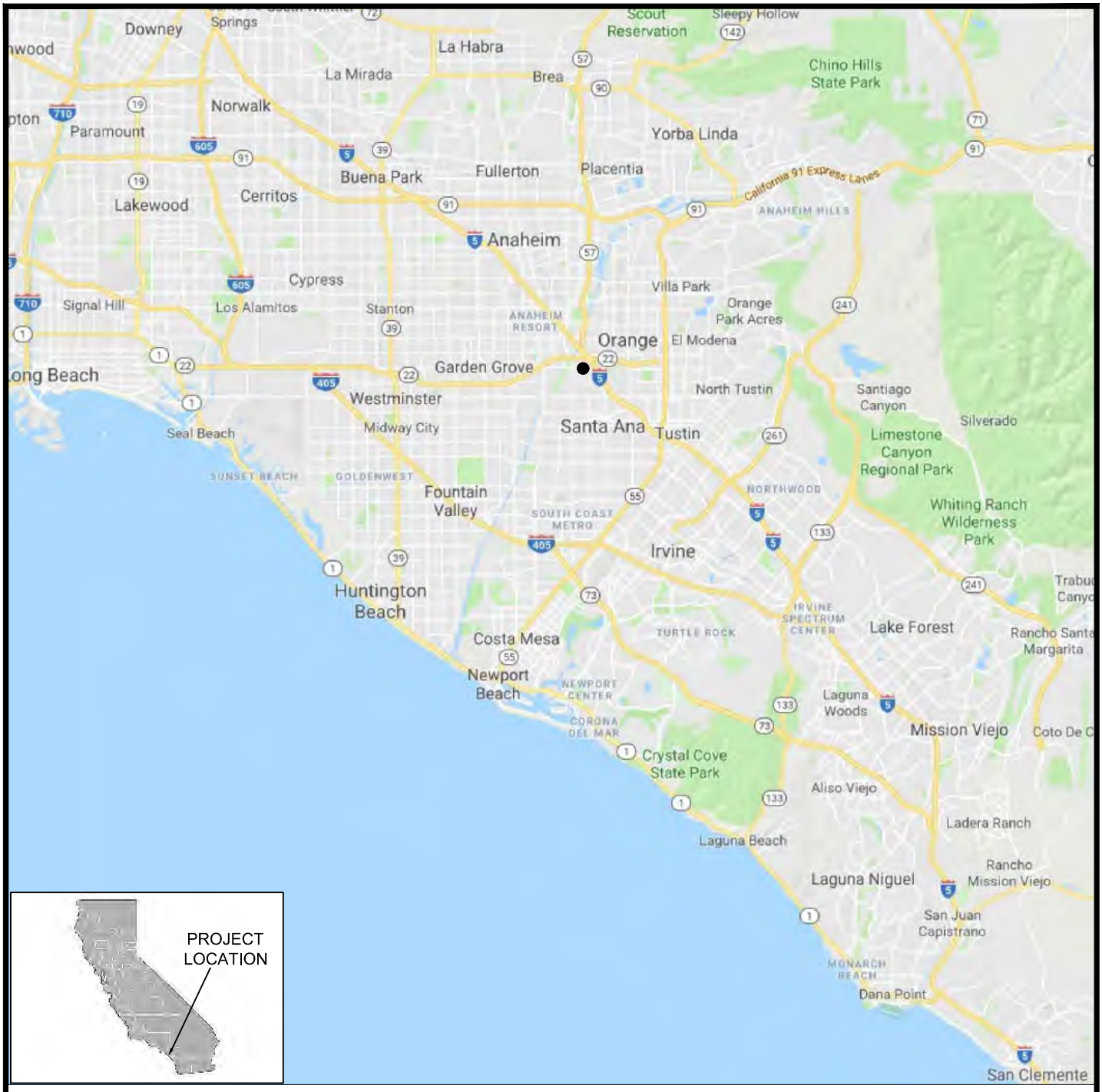
principal source of important information in this regard and is recommended not eligible for listing in the CRHR under Criterion 4 nor the NRHP under Criterion D.

P5b. Photographs (Continued)

Photograph 2: Southeast corner of Bristol Street Bridge, camera facing north, photograph taken Tetra Tech, June 13, 2019

P5b. Photographs (Continued)

Photograph 3: New pipeline (2002), on right, older pipeline (subject of this form) at left, camera facing north, photograph taken Tetra Tech, June 13, 2019



LEGEND

● PROJECT LOCATION

NOTES:

2. IMAGERY SOURCE: GOOGLE EARTH PRO, MAY 2017.
3. ALL LOCATIONS ARE APPROXIMATE.

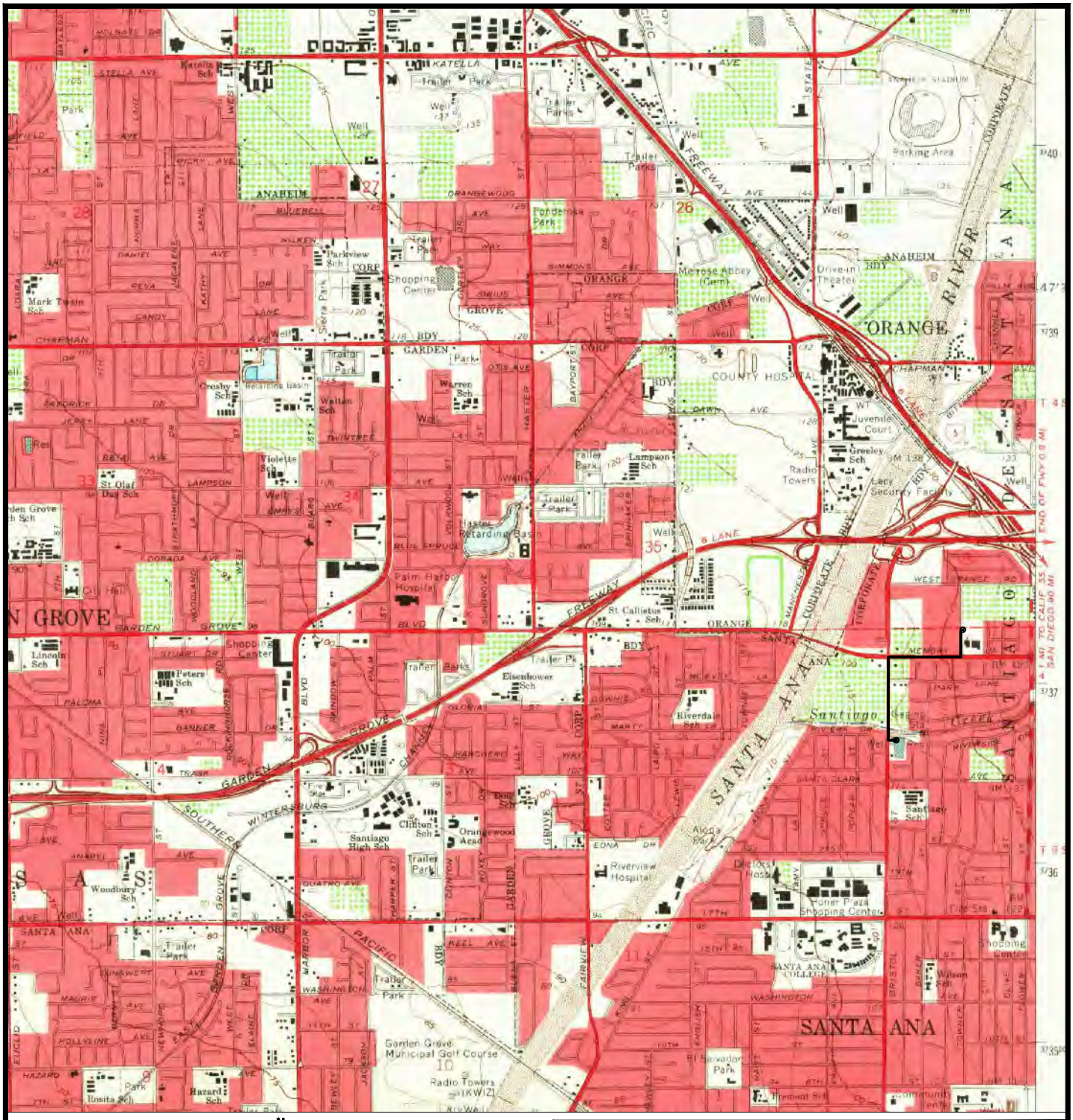
PROJECT LOCATION

PUBLIC WORKS AGENCY, CITY OF SANTA ANA — SANTA ANA, CA

PREPARED BY:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614
Phone (949) 809-5000

PROJECT NUMBER	APPROVED BY	DRAWN BY	DATE	FIGURE
194-9165	DC	KLB	MARCH 2019	1

P:\9165-IEW - Santa Ana Well 32\CAD\FIGURE 1 - SITE LOCATION MAP public works agency.dwg Mar 04, 2019 - 1:36pm katherine.brady



N

APPROXIMATE SCALE IN FEET

0 2,000 4,000

LEGEND

PIPING

⊗ WELL LOCATION

NOTES:

1. "ANAHEIM QUADRANGLE, CALIFORNIA, 1965, REV 1967.
2. ALL LOCATIONS ARE APPROXIMATE.

SITE LOCATION MAP

PUBLIC WORKS AGENCY, CITY OF SANTA ANA — SANTA ANA, CA

PREPARED BY:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614
Phone (949) 809-5000

PROJECT NUMBER	APPROVED BY	DRAWN BY	DATE	FIGURE
194-9165	DC	KLB	MARCH 2019	2

P:\9165-IEW - Santa Ana Well 32\CAD\FIGURE 1 - SITE LOCATION MAP public works agency.dwg Mar 04, 2019 - 1:35pm katherine.brady

N

APPROXIMATE SCALE IN FEET

0 500 1000

LEGEND

PROJECT LOCATION

NOTES:

2. IMAGERY SOURCE: GOOGLE EARTH PRO, MAY 2017.
3. ALL LOCATIONS ARE APPROXIMATE.

PROJECT LOCATION

PUBLIC WORKS AGENCY, CITY OF SANTA ANA — SANTA ANA, CA

PREPARED BY:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614
Phone (949) 809-5000

PROJECT NUMBER	APPROVED BY	DRAWN BY	DATE	FIGURE
194-9165	DC	KLB	MARCH 2019	3

P:\9165-IEW - Santa Ana Well 32\CAD\FIGURE 1 - SITE LOCATION MAP public works agency.dwg Mar 04, 2019 - 1:38pm katherine.brady

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

March 8, 2019

Jenna Farrell
Tetratech

VIA Email to: jenna.farrell@tetratech.com

RE: Santa Ana Well 32 Project, Orange County

Dear Ms. Farrell:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

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 lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Orange County
3/8/2019

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

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

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

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

Juaneno Band of Mission Indians Acjachemen Nation
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Tribal Manager
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Romero
Teresa Romero, Chairperson
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (949) 488 - 3484
Fax: (949) 488-3294
tromero@juaneno.com

La Jolla Band of Luiseno Indians
Fred Nelson, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Santa Ana Well 32 Project, Orange County.

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-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

Rincon Band of Luiseno Indians
Jim McPherson, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
vwhipple@rincontribe.org

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

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 Luis Rey Band of Mission Indians
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Santa Ana Well 32 Project, Orange County.

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

Cahuilla
Luiseno

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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Santa Ana Well 32 Project, Orange County.

CITY OF SANTA ANA
PUBLIC WORKS AGENCY
220 S. Daisy Ave (M-85)
Santa Ana, California 92702
www.santa-ana.org
(714) 647-3320

June 24, 2019

Joyce Stanfield Perry, Tribal Manager
Juaneño Band of Mission Indians – Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92603

Dear Ms. Perry,

RE: City of Santa Ana Public Works Agency – Request Tribal Consultation on Tribal Cultural Resources Pursuant to California Public Resource Code Section 21073, 21074, 21080.3.1, 21080.3.2, and 21084.3 (Assembly Bill 52) for the Well No. 32 Rehabilitation Project, Orange County, California

The Department of Public Works of the City of Santa Ana (City) is the lead agency, pursuant to the California Environmental Quality Act, for the preparation of an Initial Study/Mitigated Negative Declaration for the proposed Well No. 32 Rehabilitation Project (Project). In accordance with Assembly Bill (AB) 52, the City is requesting consultation with your tribal government to ensure the protection of California Native American Cultural Resources and involve your tribal government in the land use planning process for the Project. AB 52 requires lead agencies to consult with California Native American Tribes that request such consultation in writing prior to the agency's release of a Notice of Preparation of an Environmental Impact Report or Notice of Intent to adopt a Mitigated Negative Declaration or Negative Declaration on or after July 1, 2015. This correspondence is intended as formal notification of the proposed Project pursuant to AB 52.

The Bureau of Reclamation is the lead federal agency and will be reviewing the proposed Undertaking with the State Historic Preservation Officer, and the City, pursuant to Section 106 of the National Historic Preservation Act of 1966. Pursuant to Section 106, the lead federal agency is responsible for formal government-to-government consultation with Native American tribes for this Project.

Project Name: Well No. 32 Rehabilitation Project

Location: The proposed Project site is located in the City of Santa Ana, in the central portion of Orange County (County), within Section 36 of Township 4 South, Range 10 West, and Section (line) 1 and 2 of Township 5 South, Range 10 West, on the Anaheim, California, U.S. Geological Survey 7.5-minute quadrangle map. Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. A new proposed pipeline will connect the well to the existing John Garthe Reservoir, traversing North Westwood Avenue to West Memory Lane to North Bristol Street, Santa Ana, California (see Enclosure 1 Location Map).

Proposed Project: The proposed Project includes construction of 3,250 linear feet of new pipeline connecting to the existing John Garthe Reservoir, and appurtenant features such as pumping equipment, electrical equipment, building modifications, site improvements and landscaping. One of the City's wells is located at Morrison Park (Well No. 32) and it has been inactive for over the past nine years due to low operating efficiencies and high nitrate levels. Well No. 32 was installed in 1984 and is not historic in age. By reinstating Well No. 32, the City can more effectively improve the water supply reliability and help ease the burden on the other water production distribution facilities. The existing Well No. 32 is in a below ground concrete vault, just south of the Morrison Park parking lot. The vault access hatch includes a 3-foot by 8-foot access door and a 4-foot by 4-foot removable roof cover above the pump and motor. The proposed Well No. 32 site will include a well building with an electrical room (about 23 feet by 35 feet) and a chemical facility building (about 21 feet by 15 feet) with an adjacent emergency shower and eyewash area. For security, a 6-foot high wrought iron metal fence with a man-gate will be installed around the emergency shower and eyewash outside of the building. The new building will have a slightly larger aboveground footprint than the existing vault structure, it is situated in a corner of the park between two parking lots and North Westwood Avenue. Before any demolition of the existing site can occur, the pump and motor will be removed so the well can be rehabilitated. Once the rehabilitation is complete, the Well No. 32 facility may be demolished. Existing trees and boulders near the well site will be removed to provide a work area for the demolition and proposed construction.

Recently, the City of Santa Ana constructed low impact design landscaping in and around the park's parking lot, including stones and area drains within the row of mature trees in the parkway along North Westwood Avenue. As part of this Project, the new well site will incorporate the same landscaping theme around the buildings and above ground facilities.

The proposed 3,250 linear feet of pipeline will be 12 inches in diameter and begin at Well No. 32 in Morrison Park and continue south along North Westwood Avenue, then bear west onto Memory Lane, and south onto Bristol Street. Here the pipeline crosses Santiago Creek through the Bristol Street Bridge.

The route will utilize the alignment of an abandoned 18-inch water pipeline, which is in one of the bays of the Bristol Street Bridge. The existing abandoned 18-inch water pipeline and pipe hangers will be removed and disposed in order to provide space to construct the proposed 12-inch water pipeline, fiber optic conduit, and new pipe hangers. On the north side of the Bristol Street Bridge, the pipeline will turn east and cross six utilities, including a 2-inch gas line that was hung under the bridge deck, fiber optic duct bank that was installed using jack-and bore construction under the channel, 2-inch irrigation and electrical conduit hung under the bridge deck, an abandoned 6-inch sewer siphon, and the 34-inch Metropolitan Water District line constructed under the channel before turning to enter the bridge deck. The Bristol Street Bridge was originally constructed in 1947 and then was widened and reconstructed in 2003. The bridge is not eligible for the National Register of Historic Places (NRHP).

The pipeline will then continue south along Bristol Street and turn east to connect to the existing John Garthe Reservoir 16-inch fill line. A fiber optic conduit will be installed within the same trench and alignment as the proposed pipeline from Well No. 32 to the existing control room on the John Garthe Reservoir site.

The proposed Project's horizontal direct area of potential effect (APE) is considered the Project well site (see Enclosure 1) and the 3,250 linear feet of pipeline. The direct vertical APE will range from 0 to 30 feet below the ground surface. All staging areas will be within the paved parking lot of Morrison Park and along existing paved road right-of-way. Construction equipment may include heavy earth-moving equipment such as dozers, backhoes, boring/drill rigs, forklifts; crane equipment; and haul trucks.

Cultural Resource Desktop Research Results: A California Historical Resources Information Center records search of the Project and surrounding half mile area was conducted via the South-Central Coastal Information Center, Division of Anthropology, California State University, Fullerton, on March 26, 2019 (Records Search File No.: 20029.6046). Seven previously conducted surveys (OR-00778, OR-00801, OR-00846, OR-01971, OR-02273, OR 03281, OR-04085) are within the APE. No previously recorded sites were identified within the APE and one previously recorded site was identified within a half mile of the APE: site P-30-161827 is a historic building (c. 1911 single family residence) and has been determined eligible by the NRHP.

A Native American Heritage Commission Sacred Lands File Search was requested on March 1, 2019. The Native American Heritage Commission responded on March 8, 2019, that no Native American sacred lands were identified by its database as within or near the Undertaking (see Enclosure 2).

The proposed Project is within a built environment (park, landscaping, paved roadways) and the natural ground surface is not visible. Based on the geotechnical investigation results, subsurface deposits along the Project consist of 5 feet of artificial fill that underlie the paved areas. Underlying this artificial fill is Pleistocene and Holocene-aged young

alluvial fan deposits (Qyf) to at least 31 feet. Prior to modern development, historic maps and aerial photographs illustrate the proposed Project area as undeveloped (agricultural, orchards) land. By the 1970s, the agricultural land was replaced by residential subdivisions, commercial buildings, and major roads.

Prior to water diversions in the nineteenth century for agricultural use, and the introduction of nonnative species, the Santa Ana region had a variety of vegetation zones and biological diversity that was supported by climatic and hydrological conditions conducive to abundant resource availability and subsistence procurement by pre-contact populations and historic populations. Two fresh water resources are within the proposed Project area; the Santa Ana River is west of the APE and Santiago Creek (a major tributary of the Santa Ana River) crosses the southern portion of the Project. Prior to historic alterations to the landscape, the region was characterized by vegetation communities such as coastal scrub, grasslands and seasonal wetlands and riparian forest along rivers and drainages. Wildlife in the region included aquatic resources (anadromous fish and fresh water mussels), mammals such as deer, rabbits, foxes, small rodents, various birds, reptiles, and insects.

Conclusion: Your participation in this local planning process is important. If you possess any information or knowledge regarding Native American Sacred Lands or other tribal cultural resources in and around the proposed Project and wish to consult with the City regarding these resources or mitigation measures to reduce impacts of the proposed Project, please direct your comments to Armando Fernandez, P.E., Senior Civil Engineer, via telephone at 714-647-5629, or email at AFernandez@santa-ana.org, or mail at 20 Civic Center Plaza, Ross Annex, M-20 Santa Ana, CA 92702.

AB 52 allows Tribes 30 days after receiving notification to request consultation with the City. The City will be following up this letter by telephone to ensure you received this correspondence and to inquire whether your Tribe would like to consult. Should we not receive a response within 30 days, we will presume that you have declined consultation.

If you have any questions, please call me or your staff may contact Armando Fernandez via telephone at 714-647-5629.

Very truly yours,

NBC

Fuad S. Sweiss
Public Works Executive Director

Enclosure:
Map
Native American Heritage Commission Sacred Lands File Results

CITY OF SANTA ANA
PUBLIC WORKS AGENCY
220 S. Daisy Ave (M-85)
Santa Ana, California 92702
www.santa-ana.org
(714) 647-3320

June 26, 2019

Andrew Salas, Chairman
Gabrieleño Band of Mission Indians – Kizh Nation
PO Box 393
Irvine, CA 92603

Dear Mr. Salas,

RE: City of Santa Ana Public Works Agency – Request Tribal Consultation on Tribal Cultural Resources Pursuant to California Public Resource Code Section 21073, 21074, 21080.3.1, 21080.3.2, and 21084.3 (Assembly Bill 52) for the Well No. 32 Rehabilitation Project, Orange County, California

The Department of Public Works of the City of Santa Ana (City) is the lead agency, pursuant to the California Environmental Quality Act, for the preparation of an Initial Study/Mitigated Negative Declaration for the proposed Well No. 32 Rehabilitation Project (Project). In accordance with Assembly Bill (AB) 52, the City is requesting consultation with your tribal government to ensure the protection of California Native American Cultural Resources and involve your tribal government in the land use planning process for the Project. AB 52 requires lead agencies to consult with California Native American Tribes that request such consultation in writing prior to the agency's release of a Notice of Preparation of an Environmental Impact Report or Notice of Intent to adopt a Mitigated Negative Declaration or Negative Declaration on or after July 1, 2015. This correspondence is intended as formal notification of the proposed Project pursuant to AB 52.

The Bureau of Reclamation is the lead federal agency and will be reviewing the proposed Undertaking with the State Historic Preservation Officer, and the City, pursuant to Section 106 of the National Historic Preservation Act of 1966. Pursuant to Section 106, the lead federal agency is responsible for formal government-to-government consultation with Native American tribes for this Project.

Project Name: Well No. 32 Rehabilitation Project

Location: The proposed Project site is located in the City of Santa Ana, in the central portion of Orange County (County), within Section 36 of Township 4 South, Range 10 West, and Section (line) 1 and 2 of Township 5 South, Range 10 West, on the Anaheim, California, U.S. Geological Survey 7.5-minute quadrangle map. Well No. 32 is located at 2801 North Westwood Avenue in the southwest corner of Morrison Park. A new proposed pipeline will connect the well to the existing John Garthe Reservoir, traversing North Westwood Avenue to West Memory Lane to North Bristol Street, Santa Ana, California (see Enclosure 1 Location Map).

Proposed Project: The proposed Project includes construction of 3,250 linear feet of new pipeline connecting to the existing John Garthe Reservoir, and appurtenant features such as pumping equipment, electrical equipment, building modifications, site improvements and landscaping. One of the City's wells is located at Morrison Park (Well No. 32) and it has been inactive for over the past nine years due to low operating efficiencies and high nitrate levels. Well No. 32 was installed in 1984 and is not historic in age. By reinstating Well No. 32, the City can more effectively improve the water supply reliability and help ease the burden on the other water production distribution facilities. The existing Well No. 32 is in a below ground concrete vault, just south of the Morrison Park parking lot. The vault access hatch includes a 3-foot by 8-foot access door and a 4-foot by 4-foot removable roof cover above the pump and motor. The proposed Well No. 32 site will include a well building with an electrical room (about 23 feet by 35 feet) and a chemical facility building (about 21 feet by 15 feet) with an adjacent emergency shower and eyewash area. For security, a 6-foot high wrought iron metal fence with a man-gate will be installed around the emergency shower and eyewash outside of the building. The new building will have a slightly larger aboveground footprint than the existing vault structure, it is situated in a corner of the park between two parking lots and North Westwood Avenue. Before any demolition of the existing site can occur, the pump and motor will be removed so the well can be rehabilitated. Once the rehabilitation is complete, the Well No. 32 facility may be demolished. Existing trees and boulders near the well site will be removed to provide a work area for the demolition and proposed construction.

Recently, the City of Santa Ana constructed low impact design landscaping in and around the park's parking lot, including stones and area drains within the row of mature trees in the parkway along North Westwood Avenue. As part of this Project, the new well site will incorporate the same landscaping theme around the buildings and above ground facilities.

The proposed 3,250 linear feet of pipeline will be 12 inches in diameter and begin at Well No. 32 in Morrison Park and continue south along North Westwood Avenue, then bear west onto Memory Lane, and south onto Bristol Street. Here the pipeline crosses Santiago Creek through the Bristol Street Bridge.

The route will utilize the alignment of an abandoned 18-inch water pipeline, which is in one of the bays of the Bristol Street Bridge. The existing abandoned 18-inch water pipeline and pipe hangers will be removed and disposed in order to provide space to construct the proposed 12-inch water pipeline, fiber optic conduit, and new pipe hangers. On the north side of the Bristol Street Bridge, the pipeline will turn east and cross six utilities, including a 2-inch gas line that was hung under the bridge deck, fiber optic duct bank that was installed using jack-and bore construction under the channel, 2-inch irrigation and electrical conduit hung under the bridge deck, an abandoned 6-inch sewer siphon, and the 34-inch Metropolitan Water District line constructed under the channel before turning to enter the bridge deck. The Bristol Street Bridge was originally constructed in 1947 and then was widened and reconstructed in 2003. The bridge is not eligible for the National Register of Historic Places (NRHP).

The pipeline will then continue south along Bristol Street and turn east to connect to the existing John Garthe Reservoir 16-inch fill line. A fiber optic conduit will be installed within the same trench and alignment as the proposed pipeline from Well No. 32 to the existing control room on the John Garthe Reservoir site.

The proposed Project's horizontal direct area of potential effect (APE) is considered the Project well site (see Enclosure 1) and the 3,250 linear feet of pipeline. The direct vertical APE will range from 0 to 30 feet below the ground surface. All staging areas will be within the paved parking lot of Morrison Park and along existing paved road right-of-way. Construction equipment may include heavy earth-moving equipment such as dozers, backhoes, boring/drill rigs, forklifts; crane equipment; and haul trucks.

Cultural Resource Desktop Research Results: A California Historical Resources Information Center records search of the Project and surrounding half mile area was conducted via the South-Central Coastal Information Center, Division of Anthropology, California State University, Fullerton, on March 26, 2019 (Records Search File No.: 20029.6046). Seven previously conducted surveys (OR-00778, OR-00801, OR-00846, OR-01971, OR-02273, OR 03281, OR-04085) are within the APE. No previously recorded sites were identified within the APE and one previously recorded site was identified within a half mile of the APE: site P-30-161827 is a historic building (c. 1911 single family residence) and has been determined eligible by the NRHP.

A Native American Heritage Commission Sacred Lands File Search was requested on March 1, 2019. The Native American Heritage Commission responded on March 8, 2019, that no Native American sacred lands were identified by its database as within or near the Undertaking (see Enclosure 2).

The proposed Project is within a built environment (park, landscaping, paved roadways) and the natural ground surface is not visible. Based on the geotechnical investigation results, subsurface deposits along the Project consist of 5 feet of artificial fill that underlie the paved areas. Underlying this artificial fill is Pleistocene and Holocene-aged young

alluvial fan deposits (Qyf) to at least 31 feet. Prior to modern development, historic maps and aerial photographs illustrate the proposed Project area as undeveloped (agricultural, orchards) land. By the 1970s, the agricultural land was replaced by residential subdivisions, commercial buildings, and major roads.

Prior to water diversions in the nineteenth century for agricultural use, and the introduction of nonnative species, the Santa Ana region had a variety of vegetation zones and biological diversity that was supported by climatic and hydrological conditions conducive to abundant resource availability and subsistence procurement by pre-contact populations and historic populations. Two fresh water resources are within the proposed Project area; the Santa Ana River is west of the APE and Santiago Creek (a major tributary of the Santa Ana River) crosses the southern portion of the Project. Prior to historic alterations to the landscape, the region was characterized by vegetation communities such as coastal scrub, grasslands and seasonal wetlands and riparian forest along rivers and drainages. Wildlife in the region included aquatic resources (anadromous fish and fresh water mussels), mammals such as deer, rabbits, foxes, small rodents, various birds, reptiles, and insects.

Conclusion: Your participation in this local planning process is important. If you possess any information or knowledge regarding Native American Sacred Lands or other tribal cultural resources in and around the proposed Project and wish to consult with the City regarding these resources or mitigation measures to reduce impacts of the proposed Project, please direct your comments to Armando Fernandez, P.E., Senior Civil Engineer, via telephone at 714-647-5629, or email at AFernandez@santa-ana.org, or mail at 20 Civic Center Plaza, Ross Annex, M-20 Santa Ana, CA 92702.

AB 52 allows Tribes 30 days after receiving notification to request consultation with the City. The City will be following up this letter by telephone to ensure you received this correspondence and to inquire whether your Tribe would like to consult. Should we not receive a response within 30 days, we will presume that you have declined consultation.

If you have any questions, please call me or your staff may contact Armando Fernandez via telephone at 714-647-5629.

Very truly yours,

NBS

Fuad S. Sweiss
Public Works Executive Director

Enclosure:
Map
Native American Heritage Commission Sacred Lands File Results