CROWTHER SEWER PIPELINE PROJECT

Initial Study/Mitigated Negative Declaration

PREPARED FOR:

CITY OF PLACENTIA

401 East Chapman Avenue

Placentia, California 92870

Contact: Masoud Sepahi, PE, LEED GA

PREPARED BY:

DUDEK

27372 Calle Arroyo

San Juan Capistrano, California 92674

Contact: Rachel Struglia, PhD, AICP

MARCH 2019

TABLE OF CONTENTS

SECTION PAGE

APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AB	Assembly Bill
AQMP	Air Quality Management Plan
BMP	best management practice
BNSF	BNSF Railway
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CH_4	methane
City	City of Placentia
CMP	Congestion Management Program
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Orange
dB	decibel
dBA	A-weighted decibel
DTSC	Department of Toxic Substances Control
E	East
EIR	environmental impact report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
GIS	geographic information system
GPS	Global Positioning System
GWP	global warming potential
HAZWOPER	Hazardous Waste Operations and Emergency Response
IS	initial study
L_{dn}	day–night sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LST	localized significance threshold
MM-	mitigation measure

Acronym/Abbreviation	Definition
MND	mitigated negative declaration
MT	metric tons
M_w	moment magnitude
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
OCPW	Orange County Public Works
OCSD	Orange County Sanitation District
PCE	passenger car equivalents
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns in size
PPV	peak particle velocity
RCNM	Roadway Construction Noise Model
ROW	right-of-way
RTP	Regional Transportation Plan
S	South
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SO_x	sulfur oxides
SR-	State Route
SMP	Sanitary Sewer Master Plan and Condition Assessment
SWRCB	State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant
TOD	Transit-Oriented Development
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
W	West

1 INTRODUCTION

1.1 Project Overview

The City of Placentia (City) proposes upsizing the existing sewer on West (W) Crowther Avenue, South (S) Placentia Avenue, and East (E) Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (project or proposed project). The City's 2018 Sanitary Sewer Master Plan and Condition Assessment (SMP) identified specific deficiencies within the City's wastewater collection system based on existing and future conditions, largely due to redevelopment. One of the largest proposed developments is the Transit-Oriented Development (TOD) Zone Project, located just south of the existing Metrolink Station and train tracks (Figure 1, Project Location). The TOD Zone Project includes the redevelopment of approximately 22 acres of land. The existing land use types range from single-family residential to industrial, but would be rezoned to multifamily residential, resulting in increased sewer flow to the existing collection system. According to the SMP, upon build out of the TOD Zone, the existing wastewater collection system would be undersized. To accommodate the proposed redevelopment, the SMP recommends upsizing the existing sewer pipelines located along W Crowther Avenue, beginning at Bradford Avenue to S Placentia Avenue, along S Placentia Avenue to E Orangethorpe Avenue, and ending just north of the intersection of S State College Boulevard. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline.

1.2 California Environmental Quality Act Compliance

The California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) is the main statutory basis for the environmental review of projects in California. CEQA emphasizes the need for public disclosure and identifying and mitigating any environmental impacts associated with proposed projects. Unless a project falls within exemptions set forth in CEQA or the CEQA Guidelines (14 CCR 15000 et seq.), it requires at least some level of environmental review under CEQA. The proposed project does not fall within any exemptions set forth in CEQA or the CEQA Guidelines.

An initial study (IS) has been prepared by the City as the lead agency, in accordance with the CEQA Guidelines, to evaluate potential environmental effects and to determine whether an environmental impact report (EIR), a negative declaration, or a mitigated negative declaration (MND) should be prepared for the proposed project. Per Section 15070(b) of the CEQA Guidelines, an MND is prepared for a project when an IS has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed MND is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

The IS determined that the implementation of the proposed project could cause some potentially significant impacts on the environment, but as shown in the environmental analysis contained in this MND, all of the

proposed project's potentially significant impacts would be reduced to less-than-significant levels through implementation of mitigation measures. Consequently, the analysis contained herein concludes that an MND shall be prepared for the proposed project.

The environmental documentation and supporting analysis is subject to a public review period. The proposed project implementation requires an action by a state agency, the California Department of Transportation (Caltrans), which is a responsible agency. Therefore, the document will be submitted to the State Clearinghouse for review, and the review period is determined to be 30 days in accordance with Section 15073 of the CEQA Guidelines. Following review of any comments received, the City will consider these comments as a part of the proposed project's environmental review and include them with this MND for consideration by the City in accordance with Section 15074(b) of the CEQA Guidelines.

1.3 Document Organization

This MND is composed of four chapters:

- Chapter 1, Introduction, provides a general overview of the project, CEQA requirements related to the project, the organization of this MND, and documents incorporated by reference.
- Chapter 2, Project Description, includes a description of the project location, environmental setting, proposed project components, construction, and required approvals.
- Chapter 3, Initial Study Checklist, provides the CEQA IS checklist, which provides an assessment of potential environmental impacts and identifies mitigation measures to reduce potentially significant impacts to less than significant.
- Chapter 4, References and Preparers, provides citations for the sources referenced in this document and includes a list of City staff and consultants involved in preparing the MND.

The MND also includes several appendices that contain technical data related to air quality and greenhouse gas emissions, biological resources, cultural resources, geology and soils, and noise.

1.4 Existing Documents Incorporated by Reference

CEQA Guidelines, Sections 15150, 15168(c)(3), and 15168(d)(2), permit and encourage that an environmental document incorporate by reference other documents that provide relevant data. The SMP (City of Placentia 2018a), TOD Packing House District Development Standards (City of Placentia 2017a), and the City's Municipal Code (City of Placentia 2018b), which are all incorporated by reference pursuant to CEQA Guidelines, Section 15150, are available for review from the following:

City of Placentia
401 East Chapman Avenue
Placentia, California 92870

2 PROJECT DESCRIPTION

2.1 Project Location

The project site is located in the southwest portion of the City of Placentia in the County of Orange (County). Regionally, the City is bounded by the City of Brea to the north, the City of Yorba Linda to the east, the City of Anaheim to the south, and the City of Fullerton to west. Generally, the project site is located north of the State Route (SR-) 91 and SR-57 intersection in the City of Anaheim (Figure 1, Project Location).

Proposed Alignment

The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed collection system, similar to the existing collection system, would begin at Bradford Avenue and flow westerly on W Crowther Avenue approximately 3,200 linear feet, then turn south on S Placentia Avenue for 2,200 linear feet. The sewer pipeline then turns west on E Orangethorpe Avenue for an additional 1,900 linear feet before connecting Orange County Sanitation District's (OCSD's) Newhope–Placentia Trunk Sewer 230 linear feet north of the intersection of S State College Boulevard (Figure 2, Project Alignment).

Surrounding Land Uses

The project site is located within a highly developed, urbanized portion of the City. The area surrounding the project site is within the TOD Zone and contains a mix of uses, but is primarily industrial. To the north of W Crowther Avenue is the Placentia Metrolink Station, an existing railroad line, and industrial, commercial, and residential uses. The alignment crosses under the SR-57 and an Orange County Public Works (OCPW) storm drain channel at W Crowther Avenue. To the east and west of Placentia Avenue are various commercial and manufacturing uses. The alignment crosses under an approximately 48-foot-wide BNSF Railway (BNSF) right-of-way (ROW) on S Placentia Avenue. The portion of the alignment along E Orangethorpe Avenue is within the City of Fullerton and is located within an industrial zone.

2.2 Environmental Setting

Existing Collection System

The existing alignment follows the same segments as the proposed alignment described in Section 2.1. The existing collection system to be upsized is described in Table 1.

Table 1. Existing Collection System

Segment No.	Location	Length (linear feet)	Diameter (inches)	Material
1	W Crowther Avenue	3,200	10	Vitrified clay pipe
2	S Placentia Avenue	2,200	12	Vitrified clay pipe

Table 1. Existing Collection System

Segment No.	Location	Length (linear feet)	Diameter (inches)	Material
3	E Orangethorpe Avenue	1,900	12	Vitrified clay pipe

The existing alignment connects to the OCSD collection system on the western side of the intersection of E Orangethorpe Avenue and S State College Boulevard at OCSD's 48-inch-diameter Newhope–Placentia Trunk Sewer. The Newhope–Placentia Trunk Sewer was installed in 2017 with an eastern 12-inch lateral connection on W Orangethorpe Avenue for the City's existing 12-inch line (Segment 3).

Sanitary Sewer Master Plan and Condition Assessment

The SMP for the City evaluates the operation and capacity of the existing wastewater collection system within the City of Placentia, and makes recommendations for future system improvements. Collection system capacity was evaluated based on flow meter data collected during preparation of the SMP, and future wastewater projections were based on planned redevelopments.

According to the SMP, the City is 98% built out, and the majority of underdevelopment is located in the southern portion of the City. The two largest redevelopment projects are the TOD Zone and Old Town redevelopment project. Both of these developments affect the City's wastewater collection system. Therefore, a conditions assessment identified defects and provided recommendations for repair, rehabilitation, or replacement of the entire pipe segment. The SMP recommends upsizing 3,200 feet of the existing 10-inch sewer on W Crowther Avenue beginning at Bradford Avenue to 15-inch-diameter pipe, and 4,100 feet of the existing 12-inch sewer on S Placentia Avenue and E Orangethorpe Avenue to 18-inch-diameter pipe. The goal of these recommended changes is to convey future flows from the TOD Zone to the OCSD outfall trunk at S State College Boulevard and E Orangethorpe Avenue (City of Placentia 2018a).

Planning Context

The proposed alignment occurs within the streets of W Crowther Avenue, S Placentia Avenue, and E Orangethorpe Avenue, ranging from approximately 4 feet below ground surface to 12 feet below ground surface. A portion of the proposed project alignment lies within the TOD Zone on W Crowther Avenue. The purpose of the TOD Zone is to encourage mixed uses and increased density around the Metrolink Station, and seeks to provide a pedestrian, bicycle, and transit-oriented environment (City of Placentia 2017a). Additionally, a portion of the proposed alignment along W Crowther Avenue and S Placentia Avenue within the City is in an area primarily designated as Industrial and Specific Plan 5 (Placentia–Westgate Specific Plan). The Placentia–Westgate Specific Plan includes the area bordered by W Crowther Avenue and SR-57, which allows residential, retail, and office uses in proximity to the Metrolink Station (City of Placentia 2018c). The portion of the proposed alignment along S Placentia and E Orangethorpe Avenue is within the City of Fullerton and requires a City of Fullerton

Encroachment Permit. This portion of the alignment is within an area designated as Industrial by the City of Fullerton (Figure 3, General Plan Land Use) (City of Fullerton 2012).

Existing Utilities

Existing utilities in the vicinity of the proposed project include the following:

- AT&T Distribution
- Charter Communications
- City of Fullerton
- Clear Channel Outdoor
- OCPW (Flood Control District)
- OCSD
- Southern California Gas
- Southern California Edison
- Wilshire Connection (Network Provider)

2.3 Proposed Project

The proposed project involves the construction of a completely independent parallel pipeline to the existing pipeline and new manholes. Per the recommendations in the SMP, the proposed collection system would be constructed as outlined in Table 2.

Table 2. Proposed Collection System

Segment No.	Location	Connections	Length (linear feet)	Diameter (inches)	Material
1	W Crowther Avenue	Existing Sewer at Bradford Avenue	2800	15	PVC
		Existing Sewer at Evelyn Place			
		Existing Sewer at Goetz Place			
		Existing Sewer at Industrial Way			
		Caltrans SR-57 Overpass Crossing	400[1]	18	HDPE
		OCPW Storm Drain Channel			
2	S Placentia Avenue	BNFS Railway Crossing	100[1]	20	HDPE
		Existing Sewer at Kimberly Avenue	2100	18	PVC
		Existing Sewer at E Orangethorpe Avenue			
3	E Orangethorpe Avenue and S	OCSD Newhope–Placentia Trunk Sewer	2,130	18	PVC

Table 2. Proposed Collection System

Segment No.	Location	Connections	Length (linear feet)	Diameter (inches)	Material
	State College Boulevard				

Notes: Caltrans = California Department of Transportation; SR- = State Route; OCPW = Orange County Public Works; OCSD = Orange County Sanitation District; HDPE = High-Density Polyethylene.

[1] This section includes a 30-inch steel casing pipe around the carrier HDPE piping.

As shown in Table 2, the proposed project would construct a 15-inch-diameter PVC pipe and 18-inch HDPE pipe along W Crowther Avenue (Figures 4a and 4b, Segment 1), an 18-inch-diameter PVC pipe and 20-inch HDPE pipe along S Placentia Avenue (Figures 5a and 5b, Segment 2), and an 18-inch-diameter PVC pipe along E Orangethorpe Avenue and S State College Boulevard (Figure 6, Segment 3), totaling 7,530 linear feet in length. The proposed project would connect to the Newhope–Placentia Trunk Sewer one manhole upstream (north) of the existing connection located on S State College Boulevard. This is not the location of an existing connection, and thus, the proposed project would install a new 18-inch-diameter connection, totaling approximately 230 linear feet, where one does not currently exist. Upon completion of the proposed project, the existing 7,300 linear feet of 10-inch and 12-inch pipeline would be abandoned in place. Each end of the sewer pipeline between manholes would be plugged and capped. The new collection system would be reconnected to all service laterals and mainline connections.

2.4 Project Construction

The proposed sewer pipeline would mainly be installed with open-trench construction methods. Trenchless construction methods are anticipated to be required for the installation of pipeline through the BNSF ROW, the storm drain channel west of SR-57, and potentially the Caltrans ROW.

Construction would occur in a linear fashion within one lane of traffic (approximately 12 feet wide). Excavation equipment would straddle the trench and deposit spoil material into trucks for storage outside the roadway or stockpiled behind the open trench within the closed traffic lane. PVC pipe is staged along the pipeline alignment, typically on the shoulder of the road and outside the trench excavation path. The maximum length of trench, which shall be opened or partially opened at any one time, shall be limited to 400 linear feet.

There are seven mainline connections that need to be re-established once the new pipeline is installed. These seven connections are located at the road intersection of the pipe alignment and the following roads:

- Bradford Street
- Evelyn Place
- Goetz Place

- Industrial Way
- Kimberly Avenue
- E Orangethorpe Avenue
- S State College Boulevard

Flow from the mainline would be redirected to the new pipeline. Additionally, there are 44 known lateral connections to the existing pipe to be re-established to the new pipeline. Lateral quantity and locations were determined using available information from the SMP.

Excavation, trenching, and backfill technical specifications would include requirements to backfill and/or plate open excavations, as well as cleaning, removing barricades, and removing equipment from the roadway. Construction specifications would indicate construction equipment shall not be stored in public ROWs. Additionally, the contractor for the proposed project would coordinate with the City to ensure all paving requirements are met during trenching, backfilling, and grading.

Trenchless construction methods are proposed at the BNSF ROW and the OCPW storm drain channel west of SR-57. Jack and bore construction would be used to install a casing pipe beneath the railway and storm drain channel. The OCPW drain channel and the Caltrans ROW are immediately adjacent to each other. Typically, Caltrans does not allow jacking pits within its ROW. The City would propose to Caltrans to include a jack and bore receiving pit within the Caltrans ROW to allow for jack and bore construction beneath the OCPW drain channel, with the larger jacking pit located outside of both OCPW and Caltrans ROWs.

Open-cut construction with installation of a larger casing pipe is proposed within the Caltrans ROW. Although Caltrans requires trenchless construction within their ROW, Caltrans has accepted this approach on similar projects when installing a new utility beneath an existing bridge that lacks exit or entrance ramps along the proposed alignment.

2.5 Project Approvals

The proposed project would require the following approvals:

- **City of Fullerton Encroachment Permit:** The proposed project traverses into the City of Fullerton ROW at E Orangethorpe Avenue and along S Placentia Avenue. Therefore, a City of Fullerton Encroachment Permit would be required for construction. It is anticipated that trenching, backfilling, compaction, and re-paving within the City of Fullerton would require adherence to City of Fullerton Standard Details.
- **Caltrans Encroachment Permit:** The proposed project would cross underneath the SR-57 bridge at W Crowther Avenue. Coordination with Caltrans District 12 to meet District 12 requirements would be required. Additionally, the proposed project would acquire the design phase of the Caltrans Encroachment

Permit to be included in the project specifications to facilitate the bidding process. The contractor would be required to finalize the permit. Typical Caltrans requirements include the following (Caltrans 2017):

- A continuous casing pipe that extends 5 feet beyond ROW line to 5 feet beyond ROW line.
- All work done within Caltrans ROW shall be in conformance with Caltrans Standard Specifications.
- A Water Pollution Control Plan specific to the Caltrans ROW shall be submitted with the encroachment permit package.
- Pavement repair and trench backfill per Caltrans Encroachment Permit trench detail TR-0153.

As noted, coordination with Caltrans would also include the proposed jack and bore receiving pits within the Caltrans ROW.

- **OCPW Encroachment Permit:** The proposed project would cross underneath an existing, approximately 20-foot-wide OCPW storm drain channel ROW on W Crowther Avenue, just west of the SR-57. OCPW has no standard design requirements and evaluates each encroachment permit on a case-by-case basis. Generally, OCPW requires a minimum of 3 feet from the bottom of their facility to the top of pipe and a pipe casing.
- **BSNF Railway License Agreement:** The proposed new sewer pipeline crosses the BNSF ROW on S Placentia Avenue, just north of the intersection with Kimberly Avenue, requiring a license agreement with BNSF. This process includes a permit package and payment of a fee with Jones Lang LaSalle Brokerage Inc. BSNF provides a Utility Accommodation Policy for utilities crossing their facilities. The document includes design requirements, including the following (BNSF 2011):
  - A minimum bury depth of cover of 3 feet below the flow line of the ditch or ground surface and 5.5 feet from base of rail.
  - Pipelines under railroad tracks and across railroad property shall be encased in a larger casing. Generally, casings shall extend from the ROW line to ROW line.
  - No manhole would be located in the shoulder, shoulder slope, ditch or backslope, or within 25 feet of the centerline of the track.
  - Jack and bore pits shall be located a minimum of 30 feet from the centerline of the track and kept to the minimum size necessary.

  The proposed 18-inch-diameter sewer would be installed within a 30-inch-diameter steel casing through the BNSF ROW, per the requirements above.
- **OCSD Trunk Connection Permit:** The proposed project would connect into the OCSD Newhope–Placentia Trunk Sewer north of the existing connection on S State College Boulevard with a new 18-inch connection. This modification would necessitate an OCSD Trunk Connection Permit.

Engineering plans showing the proposed connection plan and profile views are required to be in accordance with OCSD's Design and Construction Requirements for Sanitary Sewers and shall be submitted to OCSD for review.

- **State Water Resources Control Board:** A Stormwater Pollution Prevention Plan (SWPPP) for a lineal project (i.e., pipeline construction) is required for General Construction by the California State Water Resources Control Board (SWRCB) if the proposed project's total area of disturbance is greater than 1 acre. Conservatively, the proposed pipeline has a disturbance area of approximately 1.01 acres. Therefore, a SWPPP would be prepared by the contractor for the proposed project.

INTENTIONALLY LEFT BLANK

3 INITIAL STUDY CHECKLIST

1. Project title:

Crowther Sewer Pipeline

2. Lead agency name and address:

City of Placentia
401 East Chapman Avenue
Placentia, California 92870

3. Contact person and phone number:

Masoud Sepahi, PE, LEED GA
714.993.8132

4. Project location:

The proposed collection system would begin at Bradford Avenue and flow westerly on W Crowther Avenue approximately 3,200 linear feet, then turn south on S Placentia Avenue for 2,200 linear feet. The sewer pipeline would then turn west on E Orangethorpe Avenue for an additional 2,130 linear feet before connection to OCSD Newhope–Placentia Trunk Sewer at the intersection of S State College Boulevard (Figure 2).

5. Project sponsor's name and address:

City of Placentia
401 East Chapman Avenue
Placentia, California 92870

6. General plan designation:

A portion of the proposed alignment is within the TOD. The proposed alignment is within the streets. The areas surrounding the alignment are designated Industrial and Specific Plan in the City of Placentia and Industrial in the City of Fullerton.

7. Zoning:

The proposed alignment is within the streets. The areas surrounding the alignment are zoned Manufacturing and Specific Plan 5 (Placentia Westgate Specific Plan) within the City of Placentia. In the City of Fullerton, the areas surrounding the alignment are zoned Manufacturing Park, Manufacturing General, and Commercial - Manufacturing.

8. Description of project. (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary):

The proposed project would construct a 15-inch PVC pipe along and 18-inch HDPE pipe along W Crowther Avenue, an 18-inch PVC pipe and 20-inch HDPE pipe along S Placentia Avenue, and an 18-inch PVC pipe along E Orangethorpe Avenue and up S State College Boulevard, totaling 7,530 linear feet. See Section 2, Project Description, for further details.

9. Surrounding land uses and setting (Briefly describe the project's surroundings):

The project site is located within a highly developed, urbanized portion of the City of Placentia. The area surrounding the project site is within the TOD Zone and contains a mix of uses, but is primarily industrial. See Section 2, Project Description, for further details.

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

The proposed project would require approval from the following agencies:

- City of Fullerton
- Caltrans
- OCPW
- BNSF
- OCSD
- SWRCB

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

See Section 3.18 for further details.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

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 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 ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Andrew A. Domingo — Signature

2/20/19 — Date

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 where it is based on project-specific factors as well as general standards (e.g., the project will 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, then 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 Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "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 (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the 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 they 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 Measures Incorporated," describe the mitigation measures which 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, where 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 less than significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Except as provided in Public Resource Code Section 21099, would the project**:**				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In 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?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FORESTRY RESOURCES – 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 Department 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 the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?	☐	☐	☒	☐
IV. BIOLOGICAL RESOURCES – 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?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☒	☐
VI. ENERGY– Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐
IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site 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?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or though the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundations?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐
X. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
XIII. NOISE – Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XIV. POPULATION AND HOUSING – Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
XVI. RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRANSPORTATION – Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
XVIII. TRIBAL CULTURAL RESOURCES				
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	☐	☐	☐	☒
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. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐
XIX. UTILITIES AND SERVICE SYSTEMS – 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?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒
XXI. 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?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.1 Aesthetics

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

No Impact. For the purposes of this analysis, a scenic vista is defined as a long, expansive view of a highly valued landscape from a publically accessible vantage point. "Highly valued landscapes" can include natural open spaces, topographic formations including mountains or hills, or more generally, areas that contribute to a high level of visual quality. There are no designated open space areas surrounding the project site. Land uses surrounding the proposed alignment include industrial, commercial, and some residential. The nearest designated open space is McFadden Park located approximately 0.4 miles south of Segment 1.

Implementation of the proposed project would not have a substantial adverse effect on a scenic vista. The proposed alignment would be placed below the surface within an existing road and would not change the visual environment in the surrounding environment. The construction would be temporary, and due to the intervening development between McFadden Park and the project site, the proposed project would not be within the viewshed of any scenic vistas. Therefore, no impacts would occur.

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 located approximately 1 mile north of the SR-91 and SR-57 intersection in a predominately urbanized area. The nearest designated state highway is the segment of SR-91 located between SR-55 and the Orange County/Riverside County line (Caltrans 2011). This segment of SR-91 is located approximately 3.2 miles southeast of the project site. The area between the project site and this designated scenic highway is highly urbanized, and thus, the proposed project would not be located in the viewshed of a designated state scenic highway. In addition, the proposed

project involves the construction of a below-surface sewer line within an existing road, which would not result in substantial damage to scenic resources such as trees, rock outcroppings, and historic buildings. Therefore, no impacts would occur.

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 is located in a highly urbanized area within the Cities of Placentia and Fullerton. The proposed project would be placed subsurface within an existing roadway and would not degrade the existing visual character of the project site and its surroundings. Construction activities associated with the proposed project would temporarily be visible to motorists and pedestrians along the proposed alignment. However, these changes would be short-term and would not result in permanent changes to the surrounding area, nor would the proposed project conflict with applicable regulations governing scenic quality. In addition, the proposed project would not conflict with applicable zoning or any regulations governing scenic quality. Therefore, with regard to degradation of the existing visual character or quality of the site, impacts would be less than significant.

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

No Impact. The proposed project does not involve any aboveground structure that would generate light or glare in the project area. Therefore, no light or glare impacts would occur from implementing the proposed project.

3.2 Agriculture and Forestry Resources

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. The California Department of Conservation designates the project site and surrounding area as Urban and Built-Up Land (DOC 2016). As such, the proposed project is not located on or adjacent to any parcels identified as Prime Farmland, Unique Farmland, or Farmland of State Importance (collectively called Important Farmland). Due to the lack of Important Farmland for the project site and the surrounding area, the proposed project would not convert or otherwise impact any Important Farmland. Therefore, no impacts associated with conversion of Important Farmland would occur.

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

No Impact. According the California Department of Conservation's Williamson Act Parcels Map for Orange County, the project site is not located on or adjacent to lands under a Williamson Act contract (DOC 2004). The closest parcel identified under a Williamson Act contract is approximately 8.4 miles southeast of the project site in the unincorporated area of North Tustin. Due to the large distance between the project site and the nearest Williamson Act parcel, development of the proposed project would not impact the parcel.

The proposed alignment is located within the existing roadway. The City's Zoning Map identifies the areas surrounding the project as Manufacturing and Specific Plan 5 (Placentia Westgate Specific Plan) (City of Placentia 1998). Neither the project site nor any surrounding parcel is zoned for agricultural use. Therefore, no impacts associated with Williamson Act contract lands or agricultural zoning would occur.

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

No Impact. No forest land, timberland, or timberland zoned Timberland Production areas (as defined in California Public Resources Code, Sections 12220(g), 4526, and 51104(g)) are located within or adjacent to the project site. Therefore, the proposed project would not conflict with existing zoning for forest land, timberland, or Timberland Production areas, and no impact would occur.

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

No Impact. The project site is located within the existing roadway in a highly urbanized area. The project site is not located on or adjacent forestland. Therefore, no impact associated with the loss or conversion of forestland would occur.

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

No Impact. As previously discussed in Sections 3.2(a) through 3.2(d), the project site is located within an existing roadway and is not located on nor surrounded by Important Farmland and forest land. The areas surrounding the project site are zoned Manufacturing and Specific Plan 5 (Placentia Westgate Specific Plan) (City of Placentia 1998). Therefore, the proposed project would not result in changes to the existing environment that could result in conversion of Farmland or forest land to non-agricultural or non-forest use. No impacts would occur.

3.3 Air Quality

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

Less-Than-Significant Impact. The project site is located within the South Coast Air Basin (SCAB), which includes the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County, and is within the jurisdictional boundaries of the South Coast Air Quality Management District (SCAQMD).

The SCAQMD administers the Air Quality Management Plan (AQMP) for the SCAB, which is a comprehensive document outlining an air pollution control program for attaining all California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). The most recent adopted AQMP is the 2016 AQMP, which was adopted by the SCAQMD Governing Board in March 2017. The 2016 AQMP represents a new approach, focusing on available, proven, and cost-effective alternatives to traditional strategies while seeking to achieve multiple goals in partnership with other entities promoting reductions in greenhouse gases (GHGs) and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017). Because mobile sources are the principal contributor to the SCAB's air quality challenges, the SCAQMD has been and will continue to be closely engaged with the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency, which have primary responsibility for these sources.

The purpose of a consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and, thus, if it would interfere with the region's ability to comply with federal and state air quality standards. The approach to determining the potential for the proposed project to conflict with an AQMP is the same when evaluating the project's consistency with the 2016 AQMP. The SCAQMD has established criteria for determining consistency with the currently applicable AQMP in Chapter 12, Sections 12.2 and 12.3, in the SCAQMD CEQA Air Quality Handbook. The criteria are as follows (SCAQMD 1993):

- Whether the project would result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of the ambient air quality standards or interim emission reductions in the AQMP.
- Whether the project would exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

To address the first criterion regarding the proposed project's potential to result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of the ambient air quality standards or interim emission reductions in the AQMP, project-generated criteria air pollutant emissions were estimated and analyzed for significance. Detailed results of this analysis are included in Appendix A. Project construction would not generate criteria air pollutant

emissions that would exceed the SCAQMD thresholds. The proposed project would not generate regular operational emissions. Therefore, the project would not exceed the first criterion.

In general, projects are considered consistent with, and would not conflict with or obstruct implementation of, the AQMP if the growth in socioeconomic factors is consistent with the underlying regional plans used to develop the AQMP. The AQMP reduction and control measures, which are outlined to mitigate emissions, are based on existing and projected land use and development. The SCAQMD uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the Southern California Association of Governments (SCAG) for its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (SCAG 2016), which is based on general plans for cities and counties in the SCAB, for the development of the AQMP emissions inventory (SCAQMD 2017). The 2016 AQMP relies on the land use and population projections provided in SCAG 2016 RTP/SCS Regional Growth Forecast. The SCAG Regional Transportation Plans and Regional Growth Forecasts are generally consistent with the local plans; therefore, the 2016 AQMP is generally consistent with local government plans.

The second criterion regarding the proposed project's potential to exceed the assumptions in the AQMP or increments based on the year of project buildout and phase is primarily assessed by determining consistency between the project's land use designations and potential to generate population growth. The proposed project would not require a change in land use designation or zoning change. Accordingly, the proposed project is consistent with the SCAG RTP/SCS forecasts used in the SCAQMD AQMP development. The proposed increase in sewer capacity was based on the growth planning within the broader project area. Thus, at a regional level, the proposed project would be consistent with the underlying growth forecast used in the AQMP.

In summary, based on the considerations presented for the two criteria, impacts relating to the proposed project's potential to conflict with or obstruct implementation of the applicable AQMP would be less than significant.

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

Less-Than-Significant Impact. Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are used in the determination of whether a project's individual emissions would have a cumulatively considerable contribution on air quality. If a project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution. Conversely,

projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003).

A quantitative analysis was conducted to determine whether construction and operation of the proposed project may result in emissions of criteria air pollutants from mobile, area, and energy sources that may cause exceedances of the NAAQS or CAAQS or contribute to existing nonattainment of ambient air quality standards. The following discussion identifies potential short- and long-term impacts that would result from implementation of the proposed project.

Construction Emissions

Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from on-road construction vehicles traveling to and from the site. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, an increment of day-to-day variability exists.

Pollutant emissions associated with construction activity were quantified using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. Default values provided by CalEEMod were used where detailed project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, vendor trucks, and worker vehicles—is contained in the CalEEMod outputs, as provided in Appendix A.

Implementation of the proposed project would generate construction-related air pollutant emissions from entrained dust, equipment and vehicle exhaust emissions, and architectural coatings. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (PM_{10}) and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size ($PM_{2.5}$) emissions. The proposed project would be required to comply with SCAQMD Rule 403 to control dust emissions generated during construction activities. Standard construction practices required under Rule 403 would be employed to reduce fugitive dust emissions, including watering the active sites approximately three times daily, depending on weather conditions. Internal combustion engines used by construction equipment and on-road vehicles would result in emissions of volatile organic compounds (VOCs), oxides of nitrogen (NO_x), carbon monoxide (CO), PM_{10}, $PM_{2.5}$, and minimal emissions of sulfur oxides (SO_x).

Pipeline construction would require both open-trench construction and trenchless tunneling depending on the location of the pipeline to be installed. A description of construction activities and equipment associated with each of these methods is provided.

Open-Trench

Open-trench construction would involve an open trench to be dug for the direct installation of pipeline. Open-trench pipeline construction would typically include six phases of construction, which would occur concurrently: demolition, trenching, pipeline installation, backfill and grading, paving, and architectural coating. The activities for open-trench pipeline construction would typically include trenching and excavation, pipe installation and covering of the installed pipe, and paving the pipeline corridor area of disturbance.

It is anticipated that construction would occur from approximately June 2019 through December 2019. The construction activity schedule, equipment mix, and number of heavy-duty trucks and workers for the air emissions modeling of the proposed project are shown in Table 3. The proposed project would include demolition of 26,000 square feet of asphalt. As specified by the City, it was assumed that 9,000 cubic yards of soil would be removed in the trenching phase but backfilled in the backfill and grading phase; thus, the haul truck distance traveled was assumed to be the length of the proposed construction site. For this analysis, it was assumed that heavy construction equipment would be used 5 days a week (22 days per month).

Table 3. Open-Trench Construction Schedule, Equipment, and On-Road Vehicles

Construction Phase	On-Road Vehicles (One-Way Trips/Day)			Off-Road Equipment		
	Workers	*Vendors*	*Haul Trucks*	*Type*	*Quantity*	*Hours per day*
Demolition	3	0	118	Concrete/industrial saw	1	8
Trenching	5	0	1,125	Excavator	1	8
Pipeline installation	5	10	0	Forklift	1	8
Backfill and Grading	5	0	1,125	Excavator	1	8
				Plate compactor	1	8
Paving	7	0	0	Rollers	2	8
Architectural coating	4	0	0	Line striping machine[1]	1	8

[1] Since CalEEMod does not include this type of equipment, the line striping machine was modeled as a 6-horsepower air compressor.

Trenchless Tunneling

Trenchless tunneling construction method is anticipated to be required for the installation of pipeline through the BNSF ROW and the OCPW storm drain channel west of SR-57, and potentially the Caltrans ROW. Trenchless tunneling pipeline construction would typically include six phases of construction, which would occur concurrently: demolition, trenching, pipeline installation, backfill and grading, paving, and architectural coating. Jack and bore construction would be used to install a casting pipe beneath the railway and storm drain channel.

It is anticipated that construction would occur from approximately June 2019 through December 2019. The construction activity schedule, equipment mix, and number of heavy-duty trucks and workers for the air emissions modeling of the proposed project are shown in Table 4. The proposed project would include demolition of 250 square feet of asphalt. As specified by the City, it was assumed that the proposed project would include 200 cubic yards of soil export and 200 cubic yards of soil import. For this analysis, it was assumed that heavy construction equipment would be used 5 days a week (22 days per month).

Table 4. Trenchless Tunneling Construction Schedule, Equipment, and On-Road Vehicles

Construction Phase	On-Road Vehicles (One-Way Trips/Day)			Off-Road Equipment		
	Workers	*Vendors*	*Haul Trucks*	*Type*	*Quantity*	*Hours per day*
Demolition	3	0	2	Concrete/industrial saw	1	8
Trenching	5	0	26	Excavator	1	8
Pipeline installation	7	2	0	Jack and bore machine[1]	1	8
Backfill and Grading	5	0	26	Excavator	1	8
				Plate compactor	1	8
Paving	7	0	0	Rollers	2	8
Architectural coating	4	0	0	Line striping machine	1	8

[1] Since CalEEMod does not include this type of equipment, the jack and bore machine was modeled as a 173 horsepower forklift.

Table 5 presents the estimated total maximum daily construction emissions generated during construction of both the open trench and trenchless tunneling construction method of the proposed project. The values shown are the maximum summer or winter daily emissions results from CalEEMod. Details of the emission calculations are provided in Appendix A.

Table 5. Estimated Maximum Daily Construction Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	(pounds per day)					
Open Trench						
2019	2.13	19.70	17.74	0.04	3.84	2.32
Trenchless Tunneling						
2019	2.40	16.57	19.93	0.03	1.46	1.14
Total Maximum Daily Emissions	**4.53**	**36.27**	**37.67**	**0.07**	**5.3**	**3.46**
SCAQMD Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: SCAQMD 2015.

Notes: VOC = volatile organic compound; NOx = oxides of nitrogen; CO = carbon monoxide; SOx = sulfur oxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District

As shown in Table 5, total maximum daily construction emissions would not exceed the SCAQMD significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years. Therefore, construction impacts of the proposed project would be less than significant and no mitigation measures are required.

The SCAB has been designated as a federal nonattainment area for O_3 and $PM_{2.5}$ and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SCAB, including motor vehicles, off-road equipment, and commercial and industrial facilities. Proposed construction activities of the project would generate VOC and NO_x emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Table 5, project-generated construction emissions would be temporary and would not exceed the SCAQMD emission-based significance thresholds for VOC, NOx, PM_{10}, or $PM_{2.5}$.

Cumulative localized impacts would potentially occur if a construction project were to occur concurrently with another off-site project. Construction schedules for potential future projects near the project site are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be considered speculative.[1] However, future projects would be subject to CEQA and would require air quality analysis and, where necessary, mitigation. Criteria air pollutant emissions associated with construction activity of future projects would be reduced through implementation of control measures required by the SCAQMD. Cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to SCAQMD Rule 403 (Fugitive Dust), which sets forth general and specific requirements for all construction sites in the SCAQMD.

Operational Emissions

Once project construction is complete, no operational activities associated with the proposed project would occur (no routine daily equipment operation or vehicle trips would be required). Because the proposed project would not result in any long-term operational activities, there would be no potential operational air quality emissions impacts.

Based on the previous considerations, the proposed project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. Therefore, impacts would be less than significant.

[1] The CEQA Guidelines state that if a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 CCR 15145).

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

Less-Than-Significant Impact. Localized project impacts associated with construction criteria air pollutants emissions are assessed below.

Sensitive Receptors

Sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). Residential land uses are located adjacent to the proposed project site approximately 50 meters to the south of the proposed project site (along South Placentia Avenue). The residences to the south of the site represent the closest off-site sensitive receptors to the project activities.

Localized Significance Thresholds

The SCAQMD recommends a localized significance threshold (LST) analysis to evaluate localized air quality impacts to sensitive receptors in the immediate vicinity of the project site as a result of construction activities. The project site is located in Source-Receptor Area 16 (North Orange County). This analysis applies the SCAQMD LST values for a 1-acre site within Source-Receptor Area 16 with a receptor distance of 50 meters.

Project construction activities would result in temporary sources of on-site criteria air pollutant emissions associated with construction equipment exhaust and heavy-duty truck activities. Off-site emissions from trucks and worker vehicle trips are not included in the LST analysis because they occur off site. The maximum daily on-site construction emissions generated during construction of the proposed project from both open trench and trenchless tunneling construction methods are presented in Table 6 and compared to the SCAQMD localized significance criteria for Source-Receptor Area 16 (North Orange County) to determine whether project-generated on-site construction emissions would result in potential LST impacts.

Table 6. Construction Localized Significance Thresholds Analysis

Year	NO_2	CO	PM_{10}	$PM_{2.5}$
	pounds per day (on-site)			
Open Trench				
2019	15.48	15.73	3.34	2.17
Trenchless Tunneling				
2019	16.15	18.74	1.09	1.04

Table 6. Construction Localized Significance Thresholds Analysis

Year	NO_2	CO	PM_{10}	$PM_{2.5}$
	pounds per day (on-site)			
Total Maximum Daily On-Site Emissions	**31.63**	**34.47**	**4.43**	**3.21**
SCAQMD LST Criteria	*104*	*685*	*10*	*4*
Threshold Exceeded?	**No**	**No**	**No**	**No**

Source: SCAQMD 2009.
Notes:
NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
See Appendix A for detailed results.

As shown in Table 6, the proposed construction activities would not generate emissions in excess of site-specific LSTs; therefore, localized project construction impacts would be less than significant.

CO Hotspots

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed CO "hotspots." CO transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors. Typically, high CO concentrations are associated with severely congested intersections operating at an unacceptable level of service (E or worse is unacceptable). Projects contributing to adverse traffic impacts may result in the formation of a CO hotspot. Additional analysis of CO hotspot impacts would be conducted if a project would result in a significant impact or contribute to an adverse traffic impact at a signalized intersection that would potentially subject sensitive receptors to CO hotspots.

The Code of Federal Regulations, 40 CFR 93.123(c)(5), Procedures for Determining Localized CO, PM_{10}, and PM_2 Concentrations (hot-spot analysis), states that "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities, which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site" (40 CFR 93.123). While project construction would involve on-road vehicle trips from trucks and workers during construction, construction activities would last approximately six months and would not require a project-level construction hotspot analysis. Because the proposed project would not result in long-term operational vehicular trips, an operational CO hotspot evaluation is also not required.

In addition, as discussed in detail in Section 3.17, Transportation, the proposed project would not result in routine daily equipment operation or vehicle trips. Accordingly, the proposed project would not generate traffic that would contribute to potential adverse traffic impacts that may result in the formation of CO hotspots. In addition, due to continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SCAB is steadily decreasing. Based on these considerations, the proposed project would result in a less-than-significant impact to air quality with regard to potential CO hotspots.

Toxic Air Contaminants

Toxic air contaminants (TACs) are defined as substances that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. As discussed under the LST analysis, the nearest sensitive receptors to the proposed project are residences located approximately 14 meters from the proposed construction area.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SCAQMD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. The SCAQMD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) non-carcinogenic effects.[2] TACs that would potentially be emitted during construction activities associated with development of the proposed project would be diesel particulate matter.

Diesel particulate matter emissions would be emitted from heavy equipment operations and heavy-duty trucks. Heavy-duty construction equipment is subject to a CARB Airborne Toxics Control Measure for in-use diesel construction equipment to reduce diesel particulate emissions. As described for the LST analysis, PM_{10} (representative of diesel particulate matter) exposure would be minimal. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of the proposed construction activities would only constitute a small percentage of the total 30-year exposure period. The construction period for the proposed project would be approximately 6 months, after which construction-related TAC emissions would cease. Due to this relatively short period of exposure and

[2] Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the project to published reference exposure levels that can cause adverse health effects.

minimal particulate emissions on-site, TACs generated during construction would not be expected to result in concentrations causing significant health risks.

The project does not propose operational activities following completion of construction activities. Operation of the proposed project would not result in any additional TAC emissions over existing baseline conditions.

The project would not result in substantial TAC exposure to sensitive receptors in the vicinity of the proposed project, and impacts would be less than significant.

Health Impacts of Criteria Air Pollutants

Construction of the proposed project would generate criteria air pollutant emissions; however, the project would not exceed the SCAQMD mass-emission thresholds.

The SCAB is designated as nonattainment for O_3 for the NAAQS and CAAQS. Thus, existing O_3 levels in the SCAB are at unhealthy levels during certain periods. The health effects associated with O_3 are generally associated with reduced lung function. Because the proposed project would not involve construction activities that would result in O_3 precursor emissions (VOC or NO_x) that would exceed the SCAQMD thresholds, the proposed project is not anticipated to substantially contribute to regional O_3 concentrations and the associated health impacts.

In addition to O_3, NO_x emissions contribute to potential exceedances of the NAAQS and CAAQS for NO_2. Exposure to NO_2 and NO_x can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Project construction would not exceed the SCAQMD NO_x threshold, and existing ambient NO_2 concentrations are below the NAAQS and CAAQS. Thus, proposed project construction is not expected to result in exceedances of the NO_2 standards or contribute to associated health effects.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. CO hotspots were discussed previously as a less-than-significant impact. Thus, the proposed project's CO emissions would not contribute to the health effects associated with this pollutant.

The SCAB is designated as nonattainment for PM_{10} under the CAAQS and nonattainment for $PM_{2.5}$ under the NAAQS and CAAQS. Particulate matter contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or

lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing (EPA 2016). As with O_3 and NO_x, the proposed project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed the SCAQMD's thresholds. Accordingly, the proposed project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the proposed project would not result in a potentially significant contribution to regional concentrations of non-attainment pollutants, and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Impacts would be less than significant.

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

Less-Than-Significant Impact. The occurrence and severity of potential odor impacts depend on numerous factors. The nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying, cause distress among the public, and generate citizen complaints.

SCAQMD provides a list of land uses associated with odor concerns, which include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). Because the proposed project would involve construction activities only, implementation of the proposed project would not result in operation of the types of land uses listed in SCAQMD's screening criteria.

During project construction, exhaust from equipment may produce discernible odors typical of most construction sites. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment. However, such odors would be short-term (6 months) and would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Accordingly, impacts associated with odors during construction would be less than significant.

3.4 Biological Resources

The following analysis relies on a biological resources assessment conducted in November and December 2018. This assessment included a pre-field review of the latest available relevant literature, published research, maps, soil data, data on biological baselines, special-status habitats, and species distributions to determine those resources that have the potential to occur along the 7,530 linear feet project alignment and surrounding 100-foot buffer (the study area) (Figure 7, Vegetation Communities and Land Covers). Dudek searched the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CDFW

2018a–d), the California Native Plant Society's *Inventory of Rare and Endangered Plants* (CNPS 2018), and the U.S. Fish and Wildlife Service's (USFWS's) occurrence data (USFWS 2018a) to identify special-status biological resources from the region. The California Natural Diversity Database and California Native Plant Society inventory were searched based on the U.S. Geological Survey 7.5-minute topographic quadrangle maps for Anaheim and Orange, where the survey area is located, as well as the surrounding ten U.S. Geological Survey 7.5-minute quadrangle maps (i.e., Black Star Canyon, El Toro, Newport Beach Park, Prado Dam, La Habra, Los Alamitos, Seal Beach, Tustin, Whittier, and Yorba Linda). Potential and/or historic drainages and aquatic features were investigated based on a review of U.S. Geological Survey topographic maps (1:24,000 scale), aerial photographs, the National Wetland Inventory database (USFWS 2018b), and the Natural Resource Conservation Service Web Soil Survey (USDA 2018a).

Following the pre-field literature review, Dudek biologist Janice Wondolleck conducted a reconnaissance-level survey of the site on December 19, 2018, to identify existing biological resources and confirm potential biological constraints. During the field survey, vegetation communities and land covers were catalogued and confirmed based on existing site conditions. Vegetation communities were mapped according to the CDFW's *List of Vegetation Alliances and Associations* (or Natural Communities List) (CDFG 2010), which is based on *A Manual of California Vegetation, Second Edition* (Sawyer et. al. 2009). Land covers not included in the *List of Vegetation Alliances and Associations* followed the Orange County Habitat Classification System (County of Orange 1992). Dudek compiled a general inventory of plant and wildlife species detected by sight, calls, tracks, scat, or other field indicators, and made a determination concerning the potential for special-status species to occur within the study area. Additionally, Dudek conducted a preliminary investigation of the extent and distribution of U.S. Army Corps of Engineers jurisdictional waters of the U.S., Regional Water Quality Control Board jurisdictional waters of the state, and CDFW jurisdictional streambed and associated riparian habitat.

Results from the general biological survey identified one non-natural land cover: developed/disturbed. The developed/disturbed land cover consists of commercial buildings, pavement, roads, parking areas, and generally lacks vegetation with the exception of some ornamental plantings that included bird-of-paradise (*Strelitzia reginae*), Bermuda grass (*Cynodon dactylon*), bougainvillea (*Bougainvillea spectabilis*), Chinese banyan (*Ficus microcarpa*), African fern pine (*Afrocarpus falcatus*), and California fan palm (*Washingtonia filifera*). The Chinese banyan, African fern pine, and California fan palm trees occur along the ROW of the existing paved roads and appear to be maintained by the City. This land cover type occurs throughout the entire study area and includes the following streets: Bradford Avenue, Evelyn Place, Goetz Place, Industrial Way, Kimberly Avenue, W Crowther Avenue, S Placentia, E Orangethorpe Avenue, and S State College Boulevard. A complete list of plants encountered within the study area is included in Appendix B-1 of this document.

A limited number of wildlife species were observed or detected during the general field survey of the study area, including four bird species, one mammal species, and one reptile species. Bird species detected within the study area were house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), black phoebe (*Sayornis*

nigricans), and lesser goldfinch (*Spinus psaltria*). No active bird nests were detected within the study area. Mammal species detected within the study area included the California ground squirrel (*Spermophilus beecheyi*). Reptile species detected included the western fence lizard (*Sceloporus occidentalis*). A complete list of wildlife encountered within the study area is included in Appendix B-2 of this document.

The study area contains a flood control channel maintained by the OCPW that would be considered a non-wetland water of the U.S. as defined by the U.S. Army Corps of Engineers and Regional Water Quality Control Board, and an unvegetated water of the state as defined by CDFW.

The types of impacts that could result from project implementation and analyzed below include direct (permanent and temporary) and indirect impacts. Direct permanent impacts include absolute and permanent physical loss of a biological resource due to clearing/grading or construction activities. Direct temporary impacts include a temporal loss of a biological resource for a short period of time and reversible due to clearing/grading or construction activities. Indirect impacts are reasonably foreseeable effects (short-term and long-term) caused by project implementation on remaining or adjacent biological resources outside the direct disturbance zone that may occur during clearing/grading or construction activities. Short-term indirect impacts can include dust, human activity, pollutants (including potential erosion), and noise that extend beyond the identified construction area. Long-term indirect impacts can include changes to hydrology, introduction of invasive species, dust, and noise that are operations-related or occur over an extended period.

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

No Impact. The study area includes the construction footprint and 100-foot buffer along the proposed sewer pipeline collection system, which encompasses approximately 22 acres (Figure 7). Due to the existing setting and developed condition of the study area, the potential for special-status species is low.

Plant Species

The project site is entirely developed and characterized by disturbed areas. No plant species listed or proposed for listing as rare, threatened, or endangered by the CDFW or USFWS were detected within the study area during the reconnaissance survey in December 2018. Additionally, no plant species considered sensitive by the California Native Plant Society were detected. Dudek performed a review of the literature, existing documentation, and geographic information system (GIS) data to evaluate the potential for special-status plant species to occur within the study area. Each special-status plant species was given a rating of not expected, low, medium, or high based on relative location to known occurrences, vegetation communities, soils, and elevation. Based on the results of the literature review

and database searches, 46 special-status plant species were identified as previously occurring within the region. However, none of these species is expected to occur within the study area based on the soils, current disturbance levels, vegetation communities (habitat) present, elevation ranges, and previous known locations based on the California Natural Diversity Database, California Native Plant Society, and USFWS records. Although the survey was not conducted during the peak bloom period for most flowering plants, special-status plant species would be unlikely to survive with the current amount of disturbance, non-native plant competition, and development already in place. The complete results of this potential to occur evaluation for special-status plants are included as Appendix B-3 of this document. Additionally, there is no USFWS-designated critical habitat for listed plant species within the study area. As a result, there would be no direct or indirect impacts to special-status plant species.

Wildlife Species

The project site is entirely restricted to developed and disturbed areas. No wildlife species listed or proposed for listing as rare, threatened, or endangered by the CDFW or USFWS were detected within the study area during the reconnaissance survey conducted in December 2018.

Dudek performed a review of literature, existing documentation, and GIS data to evaluate the potential for special-status wildlife species to occur within the study area. Each special-status wildlife species was given a rating of not expected, low, moderate, or high based on relative location to known occurrences, vegetation communities, and elevation. Based on the results of the literature review and database searches, 54 special-status wildlife species were identified as occurring within the region. However, these species are not expected or they have low potential to occur within the study area based on the vegetation communities (habitat) present, elevation ranges, and previous known locations based on the California Natural Diversity Database and USFWS records. The complete results of this potential to occur evaluation for special-status wildlife are included as Appendix B-4 of this document. Additionally, there is no USFWS-designated critical habitat for listed wildlife species within the study area. As a result, there would be no direct or indirect impacts to special-status wildlife species.

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

No Impact. The project site is located entirely on disturbed/developed land. No natural vegetation communities are present within the impact footprint. As a result, there would be no impact to riparian or sensitive vegetation communities.

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

No Impact. The project site contains a portion of a concrete-lined flood control channel maintained by OCPW. This flood control channel connects downstream to Coyote Creek, then connects to Gabriel River, and eventually flows into the Pacific Ocean. The flood control channel is a man-made, trapezoidal, concrete-lined feature devoid of vegetation with some minimal year-round, attendant nuisance and stormwater runoff from the surrounding developed watershed. This flood control channel would be considered a non-wetland water of the United States, as defined by the U.S. Army Corps of Engineers and Regional Water Quality Control Board, and an unvegetated water of the state as defined by the CDFW. To avoid adverse effects on the flood control channel, the section of the proposed pipeline alignment intersecting the channel would be installed using trenchless technology (jack and bore). The jacking pits would be sited beyond the top of bank and the depth of the constructed pipeline would be a 1-foot vertical below existing water pipelines by the California Department of Public Health, and at a minimum of 3 feet beneath the existing ground profile and existing channel invert, in order to adhere to the OCPW Encroachment Permit. Therefore, impacts to the channel would be avoided and no direct or indirect impacts to jurisdictional non-wetland waters would occur. Although the potential for hydrofracture and inadvertent returns (i.e., frac-outs) exists with the use of trenchless technology in earthen-bottomed channels, impacts to the channel due to inadvertent returns are not expected to occur given the concrete-lined nature of the channel coupled with the lack of natural, wetland resources.

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

Less-Than-Significant Impact With Mitigation Incorporated. Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal. The project site does not support wildlife corridors or habitat linkages. However, the project site contains trees and shrubs that may be used by migratory birds for breeding and nesting. Direct impacts to migratory nesting birds must be avoided to comply with the Migratory Bird Treaty Act and California Fish and Game Code. Although the proposed project would be limited to disturbed or developed areas, removal of trees or other nesting habitat would occur as a result of project implementation. Therefore, direct impacts to nesting birds could occur if conducted during the breeding and nesting season (i.e., February through August). Additionally, indirect impacts to nesting birds from short-term, construction-related noise could result

in decreased reproductive success or abandonment of an area as nesting habitat if conducted during the breeding/nesting season. However, a preconstruction nesting bird survey and biological monitoring, as described in Mitigation Measure (MM-) BIO-1 would ensure compliance with the Migratory Bird Treaty Act and California Fish and Game Code. Therefore, impacts to migratory nesting birds are considered less than significant.

MM-BIO-1

To avoid potential impacts to nesting birds in conformance with the Migratory Bird Treaty Act and California Fish and Game Code, a qualified biologist would conduct a nesting bird survey within 1 week of vegetation clearing, cutting, or removal activities during the breeding/nesting season for native birds. The survey would consist of full coverage of the proposed project footprint and an appropriate buffer, as determined by the biologist. If no occupied nests are found, no additional steps would be required. If nests are found being used for breeding or rearing young by a native bird, the nest locations would be mapped by the biologist using Global Positioning System (GPS) equipment. The species of the nesting bird and, to the degree feasible, the nesting stage (e.g., incubation of eggs, feeding of young, near fledging) would be documented. The biologist may establish an avoidance buffer around occupied nests if there is a significant potential for take of the species or potential for inadvertent destruction of the nest. The buffer would be determined by the biologist based on the species present, surrounding habitat, and existing environmental setting/level of disturbance. No construction or ground-disturbing activities would be conducted within the buffer until the biologist has determined that the nest is no longer being used for breeding or rearing and has informed the construction supervisor that activities may resume.

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

No Impact. Several ornamental trees have been planted within the existing road ROWs. According to the City of Placentia Municipal Code, no person shall plant, remove or maintain any tree or shrub growing in any public street of the city without first securing a written permit to do so from the public works director (Permit 14.12.040) (City of Placentia 2017b). However, no trees are proposed to be removed on the project site. Therefore, the proposed project would not conflict with or require acquisition of a tree removal permit.

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

No Impact. The proposed project is not within any habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan; therefore, it would not be in conflict with any such plans, and no impact would occur.

3.5 Cultural Resources

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

No Impact. The Historical Resources Compliance Report (Appendix C) prepared for this proposed project presents the results of a California Historical Resources Information System records search at the South Central Coastal Information Center, building development research, a review of the California Native American Heritage Commission's (NAHC's) Sacred Lands File, and a reconnaissance-level survey along the proposed alignment.

On October 29, 2018, Dudek completed a records search at the South Central Coastal Information Center of the proposed project site and a 0.5-mile surrounding buffer. A total of 21 studies were conducted within a 0.5-mile radius of the project site, and four of these studies intersected the project site. Additionally, the records search indicated 12 previously recorded resources are within a 0.5-mile radius of the project site. All of these resources are built-environment resources. Of the 12, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project site, and no resources intersect the project site.

In addition to the California Historical Resources Information System records search, archival resources consulted include historic aerial photographs. Although the Placentia Mutual Orange Association packing plant proper is adjacent to the proposed alignment, the building is more than 40 feet away and the main elevation faces onto South Melrose Street. Additionally, archival research indicates the elevation facing West Crowther Avenue was substantially altered between 1980 and 1995 by the removal of the one-story-tall loading docks originally lining that elevation and insertion of modern sliding windows. For this reason, the building is not individually eligible for listing in the National Register of Historic Places, but it is recognized as a Point of Historic Interest and is listed in the Historical Resource Inventory. An additional 11 historic-era properties exist on parcels adjacent to the proposed pipeline alignment; however, all such properties are at least a minimum of 40 feet outside of the proposed alignment and the reconnaissance survey revealed that they are heavily altered, some to the point of being altered beyond recognition.

No historic built environment resources were identified within the project site as a result of the California Historical Resources Information System records search. The proposed project site is situated completely within the public ROW. One built environment resource, the NRHP-ineligible, State Historic Resources Inventory-listed Placentia Mutual Orange Association building, is sited on a property adjacent to, but outside of, the proposed alignment. The elevation of the building facing the proposed alignment is a minimum of 40 feet away and was altered previously by the removal of the original loading bays along the full elevation length and insertion of inappropriate windows. Therefore, the proposed project would have no impact to historic built environment resources.

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

Less-Than-Significant Impact With Mitigation Incorporated. The record search from the South Central Coastal Information Center indicated that 21 previous cultural resources technical investigations have been conducted within 0.5 miles of the project area. Of these, four studies intersect the project area. The records search also indicated that 12 resources have been recorded within a 0.5-miles radius of the project site. All of these resources are built-environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project site.

On October 30, 2018, Dudek requested a search of the Sacred Lands Files from the NAHC. A response letter was received via email from the NAHC on November 15, 2018, stating a negative finding for any cultural resources within the Sacred Lands File. Because the Sacred Lands File search does not include an exhaustive list of Native American cultural resources, the NAHC suggested contacting Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the proposed project. The NAHC provided the contact information of 10 individuals and/or entities to contact along with the Sacred Lands File search results. Dudek sent letters to each contact listed by the NAHC on November 16, 2018. This outreach was conducted for informational purposes only and did not constitute formal government-to-government consultation as specified by Assembly Bill 52, which is discussed in detail in Section 3.18, Tribal Cultural Resources.

No archaeological resources were identified within the project site or immediate vicinity as a result of the records search or Native American coordination. The project site is situated completely within the public ROW and the proposed project consists of upgrading an existing sewer line, which means much of the ground disturbance would be within previously disturbed areas. Therefore, the area is considered to be of low sensitivity for encountering archaeological deposits. Despite the low probability of encountering archaeological deposits, it is always possible that such deposits exist subsurface. Therefore, MM-CUL-1 would reduce potential impacts to unanticipated archaeological resources during construction to less than significant.

MM-CUL-1

All construction crew members should be alerted to the potential to encounter sensitive archaeological material. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole marine shell,

burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the significance of the find under the California Environmental Quality Act (CEQA) (14 CCR 15064.5(f); California Public Resources Code, Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

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

Less-Than-Significant Impact. As discussed above, there are no previously recorded cultural resources that intersect the proposed alignment. The project site is situated completely within the public ROW and the proposed project consists of upgrading an existing sewer line, which means much of the ground disturbance would be within previously disturbed areas. Therefore, the area is considered to be of low sensitivity for encountering archaeological deposits. However, in accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has determined, within 2 working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall complete his/her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains. As a result, impacts would be less than significant.

3.6 Energy

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?

Construction

Less-Than-Significant Impact. Construction of the proposed project would require the use of electric power for as-necessary lighting and electronic equipment (such as computers inside temporary

construction trailers and heating, ventilation, and air conditioning). The amount of electricity used during construction would be minimal because typical energy demand stems from the use of several construction trailers in addition to electrically powered hand tools. The majority of the energy used during construction would be from petroleum. The electricity used for construction activities would be temporary and minimal.

Petroleum would be consumed throughout construction of the proposed project. Fuel consumed by construction equipment would be the primary energy resource expended over the course of construction, and vehicle miles traveled associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. However, the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. In addition, the petroleum used during construction would be temporary and minimal, and would not be wasteful or inefficient. Therefore, impacts would be less than significant.

Operation

No Impact. As previously discussed in Section 3.3, Air Quality, no operational activities associated with the proposed project would occur (no routine daily equipment operation or vehicle trips would be required). Therefore, the proposed project would not result in the consumption of energy sources and no impacts would occur.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The proposed project would not result in wasteful, inefficient, and unnecessary consumption of energy during construction or operation. During construction, the proposed project would comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. No operational activities associated with the proposed project would occur requiring energy. Therefore, the proposed project would not conflict with or obstruct a state or local plan, and no impacts would occur.

3.7 Geology and Soils

The following analysis relies, in part, on the Geotechnical Investigation Report prepared by Converse Consultants, dated October 19, 2018, and included as Appendix D.

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 project site is not located within an Alquist-Priolo Earthquake Fault Zone (CGS 1998a, 1998b). There are no known active faults projecting toward or extending across the proposed alignment. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty, but is considered low (Appendix D). Therefore, impacts associated with fault rupture within the project site are less than significant.

ii) Strong seismic ground shaking?

Less-Than-Significant Impact. The proposed alignment is situated in a seismically active region. As is the case for most areas of Southern California, ground shaking resulting from earthquakes associated with nearby and more distant faults may occur at the proposed alignment. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the alignment. The Whittier Fault, located approximately 5.2 miles northwest of the site, is capable of causing maximum moment magnitude (M_w) of 6.8M_w. Similarly, sections of the Elysian Park Thrust, Compton Thrust, and Chino-Central Avenue (Elsinore) Fault, are capable of causing an earthquake with a maximum moment magnitude 6.7 M_w, 6.8 M_w, and 6.7 M_w, respectively (Appendix D).

To address the seismic characteristics of the project site, Appendix D provides seismic parameters based on the 2016 California Building Code, which were determined using the Seismic Design Maps application. The structural design of the proposed sewer pipeline would be based on these seismic parameters, such that direct seismically induced ground-shaking impacts would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less-Than-Significant Impact. Liquefaction is typified by a buildup of pore water pressure in the affected soil layer to a point where a total loss of shear strength may occur during a seismic event, causing the soil to behave as a liquid. Liquefaction primarily occurs in loose, saturated, granular soils. Cohesive soils, such as clays and silty clays, are generally not considered susceptible to soil liquefaction. Soil liquefaction generally occurs in submerged granular soils and non-plastic silts located within 50 feet of the ground surface during or after strong ground shaking.

According to the California Geological Survey regulatory maps, the project site is not located in an area susceptible to liquefaction (CGS 1998a, 1998b). In addition, the geotechnical investigation did

not encounter groundwater at the maximum explored depth of 21.5 feet below ground surface. Due to the absence of shallow groundwater, the risk of liquefaction is considered low (Appendix D). Therefore, impacts associated with the liquefaction would be less than significant.

iv) Landslides?

No Impact. Per the California Geological Survey regulatory maps, the project site is not located within an area susceptible to earthquake-induced landslides (CGS 1998a, 1998b). Additionally, due to the relatively flat topography of the proposed alignment, the risk of land sliding is considered low (Appendix D). Therefore, no impacts associated with the landslides would occur.

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

Short-Term Construction

Less-Than-Significant Impact. Earthwork activities during construction of the proposed project, including excavation and trenching, would result in temporary disturbance of soil. Soil erosion could result from such construction activities, thereby potentially affecting the water quality of local downstream waterways. As previously addressed in Section 2.5, Project Approvals, the SWRCB requires an SWPPP for General Construction. The SWPPP consists of best management practices (BMPs) designed to reduce and capture soil erosion, under the guidance of a qualified SWPPP practitioner. Sediment control BMPs may include stabilized construction entrances, sediment filters on existing inlets, or the equivalent. Because the proposed project would be required to comply with SWPPP BMPs for erosion control, short-term construction impacts associated with erosion would be less than significant.

Long-Term Operational

No Impact. Upon completion of construction, the project site would be restored to its preconstruction conditions. Therefore, no operational impacts related to soil erosion or loss of topsoil would occur.

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

Less-Than-Significant Impact. As discussed in Sections 3.7(a)(iii) and 3.6(a)(iv), the project site is not located in an area susceptible to on- or off-site landslides and the risk of liquefaction is considered low. The proposed project involves the construction of a new sewer pipeline, parallel to the existing pipeline, which would be abandoned in place. As such, the soils within the proposed alignment are capable of supporting the proposed project. In addition, the geotechnical investigation concluded the

potential for lateral spreading and subsidence is considered low. If potentially unstable soils are encountered, modification based on requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, current amendments, and the Construction Safety Act should be met (Appendix D). Therefore, impacts associated with unstable soil would be less than significant.

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

Less-Than-Significant Impact. Expansive soils are characterized by their potential shrink/swell behavior. Shrink/swell is the cyclic change in volume (expansion and contraction) that occurs in certain fine-grained clay sediments from the process of wetting and drying. Clay minerals are known to expand with changes in moisture content. The higher the percentage of expansive minerals present in near surface soils, the higher the potential for substantial expansion.

Based on review of the available geologic mapping (Morton and Miller 2006), Segment 1 is underlain by very old (middle to early Pleistocene-aged) alluvial sediments. These deposits consist of moderately to well-consolidated silt, sand, gravel, and conglomerate. Segments 2 and 3 are underlain by young (Holocene- and late Pleistocene-aged) alluvial fan sediments deposited by the Santa Ana River. The deposits primarily consist of unconsolidated to moderately consolidated mixtures of silt, sand, gravel, cobbles, and boulders. Due to the lack of presence of clay material in the underlying soils, the project site is not considered to be located on expansive soils. Further, the geotechnical investigation recommends any imported fill be tested and approved by a geotechnical representative prior to delivery to the alignment (Appendix D). Therefore, impacts associated with expansive soils would be less than significant.

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

No Impact. No septic tanks or alternative wastewater disposal system are proposed as part of the project. Therefore, no impacts would occur.

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

Less-Than-Significant Impact With Mitigation Incorporated. The project site is situated completely within the public ROW. Additionally, the proposed project consists of upgrading an existing sewer line, which means much of the project's ground disturbance would be within previously disturbed areas. Therefore, the area is considered to be of low sensitivity for encountering paleontological resources.

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state laws and regulations. Paleontological resources are explicitly afforded protection by CEQA, specifically in Section V(c) of CEQA Guidelines Appendix G, the Environmental Checklist Form, which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or . . . unique geological feature[s]" (14 CCR 15000 et seq.). Further, CEQA provides that, generally, a resource shall be considered "historically significant" if it has yielded or may be likely to yield information important in prehistory (14 CCR 15064.5 [a][3][D]). Therefore, despite the low probability of encountering archaeological deposits, MM-GEO-1 is proposed to reduce impacts to paleontological resources to a less-than-significant level.

MM-GEO-1

In the event that paleontological resources (e.g., silicified shell, bone, or other features) are exposed during construction activities for the proposed project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified paleontologist can evaluate the significance of the find. This analysis should comply with guidelines and significance criteria specified by the Society of Vertebrate Paleontology. If the discovery proves significant under CEQA, additional work may be warranted, such as preparation of an archaeological treatment plan, testing, or data recovery.

3.8 Greenhouse Gas Emissions

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

Less-Than-Significant Impact. Climate change refers to any significant change in measures of climate—such as temperature, precipitation, or wind patterns—lasting for an extended period of time (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system, and many factors (natural and human) can cause changes in Earth's energy balance. The greenhouse effect is the trapping and buildup of heat in the atmosphere near the Earth's surface (troposphere). The greenhouse effect is a natural process that contributes to regulating the Earth's temperature, and it creates a livable environment on Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise. Global climate change is a cumulative impact; a project contributes to this impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. Thus, GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008).

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g), for purposes of

administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride (see also CEQA Guidelines Section 15364.5).[3] The three GHGs evaluated herein are CO_2, CH_4, and N_2O.

Gases in the atmosphere can contribute to climate change both directly and indirectly.[4] The Intergovernmental Panel on Climate Change developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e). Consistent with CalEEMod Version 2016.3.2, this GHG emissions analysis assumed the GWP for CH_4 is 25 (emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC 2007).

As discussed in Section 3.3, the proposed project is located within the jurisdictional boundaries of SCAQMD. In October 2008, the SCAQMD proposed recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects as presented in its *Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold* (SCAQMD 2008). This document, which builds on the previous guidance prepared by the California Air Pollution Control Officers Association, explored various approaches for establishing a significance threshold for GHG emissions. The draft interim CEQA thresholds guidance document was not adopted or approved by the Governing Board. However, in December 2008, the SCAQMD adopted an interim 10,000 MT CO_2e per-year screening level threshold for stationary source/industrial projects for which the SCAQMD is the lead agency (see SCAQMD Resolution No. 08-35, December 5, 2008). The 10,000 MT CO_2e per-year threshold was based on the conclusion that the threshold was consistent with achieving an emissions capture rate of 90% of all new or modified stationary source projects, which in turn uses Executive Order (EO) S-3-05 as the basis for deriving the screening level.

The SCAQMD formed a GHG CEQA Significance Threshold Working Group to work with SCAQMD staff on developing GHG CEQA significance thresholds until statewide significance thresholds or guidelines are established. From December 2008 to September 2010, the SCAQMD hosted working group meetings and revised the draft threshold proposal several times, although it did

[3] Climate-forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in the California Health and Safety Code Section 38505; impacts associated with other climate-forcing substances are not evaluated herein.

[4] Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2016).

not officially provide these proposals in a subsequent document. The SCAQMD has continued to consider adoption of significance thresholds for residential and general land use development projects. The most recent proposal, issued in September 2010, uses the following tiered approach to evaluate potential GHG impacts from various uses (SCAQMD 2010):

Tier 1. Determine if CEQA categorical exemptions are applicable. If not, move to Tier 2.

Tier 2. Consider whether the proposed project is consistent with a locally adopted GHG reduction plan that has gone through public hearing and CEQA review, that has an approved inventory, includes monitoring, etc. If not, move to Tier 3.

Tier 3. Consider whether the project generates GHG emissions in excess of screening thresholds for individual land uses. The 10,000 MT CO_2e per-year threshold for industrial uses would be recommended for use by all lead agencies. Under option 1, separate screening thresholds are proposed for residential projects (3,500 MT CO_2e per year), commercial projects (1,400 MT CO_2e per year), and mixed-use projects (3,000 MT CO_2e per year). Under option 2, a single numerical screening threshold of 3,000 MT CO_2e per year would be used for all non-industrial projects. If the project generates emissions in excess of the applicable screening threshold, move to Tier 4.

Tier 4. Consider whether the project generates GHG emissions in excess of applicable performance standards for the project service population (population plus employment). The efficiency targets were established based on the goal of Assembly Bill (AB) 32 to reduce statewide GHG emissions to 1990 levels by 2020. The 2020 efficiency targets are 4.8 MT CO_2e per-service population for project-level analyses and 6.6 MT CO_2e per-service population for plan-level analyses. If the project generates emissions in excess of the applicable efficiency targets, move to Tier 5.

Tier 5. Consider the implementation of CEQA mitigation (including the purchase of GHG offsets) to reduce the project efficiency target to Tier 4 levels.

Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, establish specific thresholds of significance, or mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance that are consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009).

To determine the proposed project's potential to generate GHG emissions that would have a significant impact on the environment, the project's GHG emissions were compared to the industrial quantitative threshold of 10,000 MT CO_2e per year. Per the SCAQMD guidance, construction emissions should be amortized over the operational life of the project, which is assumed to be 30 years (SCAQMD 2008). This impact analysis, therefore, compares amortized construction emissions to the proposed SCAQMD threshold of 10,000 MT CO_2e per year because the proposed project would not include operational activities or associated GHG emissions.

Construction Emissions

Construction of the proposed project would result in GHG emissions primarily associated with the use of off-road construction equipment, on-road trucks, and worker vehicles. As described in Section 3.3, CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 3.3(b). See Appendix A for a detailed depiction of expected construction schedules (including information regarding phasing, equipment used during each phase, truck trips, and worker vehicle trips) assumed for the purposes of emissions estimation. On-site sources of GHG emissions include off-road equipment, and off-site sources include trucks and worker vehicles. Table 7 presents construction GHG emissions for the project from on- and off-site emissions sources.

Table 7. Estimated Annual Construction GHG Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	metric tons per year			
Open Trench				
2019	242.13	0.05	0.00	243.31
Trenchless Tunneling				
2019	224.95	0.05	0.00	226.12
Total Annual	**467.08**	**0.10**	**0.00**	**469.43**
			Amortized Over 30 Years	**15.65**
			SCAQMD Recommended Threshold	*10,000*
			Exceeds Threshold?	**No**

Source: See Appendix A for complete results.
Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; SCAQMD = South Coast Air Quality Management District.

As shown in Table 7, the estimated total GHG emissions during project construction of the open trench and trenchless tunneling methods would be approximately 469 MT CO_2e. Amortized over 30 years, construction GHG emissions would be approximately 16 MT CO_2e per year. Because the project would not generate operational emissions, as discussed below, total amortized project emissions of 16 MT CO_2e per year would not exceed the recommended SCAQMD threshold of 10,000 MT CO_2e per year.

In addition, as with project-generated construction criteria air pollutant emissions, GHG emissions generated during proposed demolition activities would be short term, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. Therefore, in relation to the generation of GHGs, the project's impact would be less than significant.

Operational Emissions

Once project construction is complete, no operational activities associated with the proposed project would occur (no routine daily equipment operation or vehicle trips would be required). Because the project would not result in any long-term operational activities, there would be no potential operational GHG emissions impacts.

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

Less-Than-Significant Impact. The City has not adopted a Climate Action Plan. The City has adopted a green building code; however, it does not include construction regulations relating to GHG emissions. Although there is currently no local guidance that would be applicable to the CEQA analysis of the proposed project, and there are no mandatory GHG plans, policies, or regulations or finalized agency guidelines that would apply to implementation of the proposed project, a description of the relevant plans with GHG reduction strategies is provided below.

The Climate Change Scoping Plan, approved by CARB in 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific projects, nor is it intended to be used for project-level evaluations.[5] Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (hybrid, electric, and more fuel-efficient vehicles) and associated fuels, among others.

The proposed project would not impede the attainment of the GHG reduction goals for 2030 or 2050, as identified in EO S-3-05 and Senate Bill 32. EO S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050.

[5] The Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009).

Senate Bill 32 establishes a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. While there are no established protocols or thresholds of significance for that future year analysis, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014). As stated in the Second Update, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, Senate Bill 32, and EO S-3-05 (CARB 2017). As discussed previously, the proposed project would result in minimal short-term GHG emissions, and would not result in long-term operational emissions. As such, the proposed project would not conflict with the state's trajectory toward future GHG reductions.

Based on the preceding considerations, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and no mitigation is required. Therefore, impacts associated with conflicting with an applicable plan, policy, or regulation relating to GHGs would be less than significant.

3.9 Hazards and Hazardous Materials

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

Short-Term Construction

Less-Than-Significant Impact. A variety of hazardous substances and waste would be transported, used, or disposed of during construction of the proposed project. These would include fuels for machinery and vehicles, cleaning solvents, sealants, and storage containing such materials. A significant hazard to the public or the environment could occur because of accidental spills, fires, explosions, or pressure released involving hazardous materials. However, any transport, use, or disposal of hazardous materials would comply with all applicable local and state regulations such as those from the EPA, the Orange County Environmental Health Division, and the California Department of Resources, Recycling, and Recovery. The actual quantity of hazardous or potentially hazardous materials permitted to be stored on the project site would be determined by (1) the individual hazardous characteristics of the material; (2) manufacturer guidelines; (3) and the applicable federal, state, and local regulations. Adherence to applicable regulations regarding hazardous materials would ensure that construction of the proposed project would not create a significant hazard to the public or the environment. Therefore, short-term construction impacts would be less than significant.

Long-Term Operational

No Impact. During operations of the proposed sewer pipeline, there would be no transport, use, or disposal of hazardous materials. Additionally, the proposed alignment would not differ from the current operations. Therefore, the proposed project would not create a hazard to the public or environment through the routine transport, use, or disposal of hazardous materials during operations and maintenance of the proposed sewage line. Thus, no impacts would occur.

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

Less-Than-Significant Impact. As discussed in Section 3.9(a), the construction of the proposed project would transport, use, or dispose of a variety of hazardous materials, which could result in the accidental release of hazardous materials. Accidental spills, leaks, fires, explosions, or pressure releases involving hazardous materials represent a potential threat to human health and the environment if not properly treated. Adherence to applicable regulations regarding hazardous materials would ensure that construction of the proposed project would not create a significant hazard to the public or the environment. Therefore, impacts associated with accidental release of hazardous materials would be less than significant.

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

No Impact. The nearest school to the project site is the McFadden Elementary School, located approximately 0.5 miles east of the intersection of Segment 2 and 3 at S Placentia and E Orangethorpe Avenue. Operation of the proposed project would not involve storage or use of chemicals. As such, the proposed project would not emit hazardous air emissions within 0.25 miles of a school. Therefore, the proposed project would have no impact on existing or proposed schools.

d) Would the project 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?

Less-Than-Significant Impact. Pursuant to CEQA, the California Department of Toxic Substances Control (DTSC) maintains a Hazardous Waste and Substances Sites List (Cortese List). Government Code Section 65962.5(a) requires the list be updated at least annually to reflect new information regarding previously listed sites or new sites requiring response action (CalEPA 2018). The DTSC is responsible for a portion of the information contained in the Cortese List. According to the DTSC's EnviroStor database, there are no clean-up sites located within the existing roadway of the proposed alignment (DTSC 2018a). The nearest identified site is Winonics Inc. (located at 1257 S State College Boulevard), which is adjacent to the S State College Boulevard and E Orangethorpe intersection.

According to the EnviroStor Database, the status of this site is inactive and no potential contaminants of concern have been identified (DTSC 2018b). Other state and local government agencies are required to provide additional hazardous materials release information for the Cortese List. The SWRCB's GeoTracker database identifies leaking underground storage tanks, waste discharge sites, oil and gas sites, and other waste or cleanup sites. A review of GeoTracker did not identify any sites or facilities within the existing roadway of the proposed alignment (SWRCB 2018). Therefore, impacts associated with a hazardous materials site would be less than significant.

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

No Impact. The closest public airport to the project site is Fullerton Municipal Airport, which is located approximately 5.5 miles northwest of the project site in the City of Fullerton. It is a general aviation airport that serves private, business, and corporate tenants. According to the Airport Impact Zones Map in the *Airport Environs Land Use Plan for the Fullerton Municipal Airport* (ALUC 2004), the project site is located outside of any impact zone around the airport. Therefore, no impacts associated with public airport hazards would occur.

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

Less-Than-Significant Impact With Mitigation Incorporated. The proposed project involves the construction of a new sewer pipeline with an existing roadway in the Cities of Placentia and Fullerton. Upon completion of construction, the project site would be restored to its preconstruction conditions, and therefore, would not interfere with an emergency response plan or emergency evacuation plan. Installation of the pipeline would require temporary lane closures within public streets, which could temporarily interfere with evacuation routes. However, incorporation of MM-TRA-1, as described in Section 3.17(c), would ensure that any temporary impacts to emergency vehicle flow and/or ingress/egress to facilities is coordinated in advance with emergency service providers and law enforcement. This coordination would ensure that provision of sufficient emergency service, access, and evacuation can occur during construction, if necessary. Implementation of MM-TRA-1 would prevent potentially significant impacts to local emergency service providers.

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

No Impact. Much of the land surrounding the project site is highly developed, and as a whole, the project area lacks any lands considered wildlands or wildland–urban interfaces. According to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zones maps, the project site is neither moderately, highly, nor very highly susceptible to wildland fire (CAL FIRE 2011). Therefore, no impacts associated with wildland fires would occur.

3.10 Hydrology and Water Quality

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

Short-Term Construction

Less-Than-Significant Impact. Construction associated with the proposed project involves earthwork activities that would disturb soil. Soil erosion could result from these activities, thereby, potentially affecting the water quality of local downstream waterways. As previously addressed in Section 3.7(b), the SWRCB requires preparation of a SWPPP. Because the proposed project would disturb one or more acres of soil, the proposed project is subject to the SWRCB National Pollutant Discharge Elimination System (NPDES) Construction General Permit. An SWPPP is required as part of compliance with the NPDES Permit to ensure that water quality standards are met and that stormwater runoff from the construction work areas does not cause degradation of water quality in receiving water bodies. The SWPPP consists of BMPs designed to reduce and capture soil erosion, under the guidance of a qualified SWPPP practitioner. Sediment control BMPs may include stabilized construction entrances, sediment filters on existing inlets, or the equivalent to reduce erosion impacts. Implementation of the SWPPP and incorporation of BMPs would ensure proper measures are in place to prevent, to the extant feasible, stormwater runoff conveying sediments to downstream receiving waters. Therefore, short-term construction impacts associated with water quality standards would be less than significant.

Long-Term Operational

Less-Than-Significant Impact. Upon completion of construction, the project site would be restored to its preconstruction conditions and no loss of topsoil affecting downstream waterways would occur. The proposed project would increase capacity of the existing sewer line and connect to OCSD's Newhope–Placentia Trunk Sewer. Wastewater collected from OCSD is collected and treated at OCSD's wastewater treatment facilities, which are required to comply with waste discharge requirements (RWQCB 2004). In addition, the proposed project is located within an existing roadway, and is not a

site of groundwater infiltration; thus, impacts to groundwater quality would be less than significant. Therefore, operational impacts associated with water quality standards would be less than significant.

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

No Impact. The proposed project would not require the permanent use of water supplies, which could decrease groundwater supplies. In addition, the existing and proposed alignment are located with existing roadways that are impervious, and thus, does not support groundwater recharge. Therefore, the construction and operations associated with the proposed project would not decrease groundwater or interfere substantially with groundwater recharge that may impede sustainable groundwater management. As such, no impact would occur.

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

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

Less-Than-Significant Impact. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. As previously discussed in Section 2.5, the proposed project would cross underneath an existing, approximately 20-foot-wide OCPW storm drain channel on W Crowther Avenue, located west of SR-57. This channel is maintained the by the Orange County Flood Control District, and requires an OCPW Encroachment Permit. The proposed alignment would not alter the course of the existing channel. Additionally, the Orange County Flood Control District would review the proposed project plans to ensure that there is no damage or alterations to the existing channel. Further, one of the requirements for the OCPW Encroachment Permit is compliance with the NPDES Construction General Permit and preparation of an SWPPP for any project that disturbs 1 or more acres of soil. During construction, the proposed project would implement sediment-control BMPs in accordance with the SWPPP to reduce soil erosion or siltation on- or off-site. Therefore, impacts would be less than significant.

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

Less-Than-Significant-Impact. The proposed alignment would cross underneath an existing storm drain channel maintained by the Orange County Flood Control District. However, the proposed alignment would not alter the course of the existing channel, and the Orange County Flood Control District would review the proposed project plans to ensure that there is no damage or alterations to the existing channel. The proposed project would be

constructed within an existing paved roadway. As such, the proposed project would not result in new impervious areas, and would not substantially change the amount of surface runoff on- or off-site. Therefore, the proposed project would not result in an increase in on- or off-site flooding, and impacts would be less than significant.

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

No Impact. The proposed project involves the construction of a completely independent parallel sewer pipeline to replace the existing sewer pipeline and increase current capacity. The proposed project would be constructed within an existing paved roadway and would not increase impervious areas nor alter on- or off-site drainage such that increased stormwater flows would occur. Therefore, the proposed project would not create or contribute to increased runoff, and no impacts would occur.

iv) Impede or redirect flood flow?

Less-Than-Significant Impact. According to the Federal Emergency Management Agency Flood Insurance Rate Map Panels No. 06059C0132J and 06059C0151J, the OCPW storm drain channel is located within a 100-year flood zone (FEMA 2009a, 2009b). The proposed alignment would cross underneath this storm drain channel, and therefore, would not impede or redirect flood flow. Thus, impacts would be less than significant.

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

Less-Than-Significant Impact. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. It would be possible for seiches to occur within the channels located adjacent to the proposed alignment during a major seismic event coinciding with high flow (Appendix D). However, the proposed alignment crosses underneath the OCPW storm drain channel and would not be subject to inundation as a result of a seiche.

Tsunamis are large waves generated in large bodies of water by fault displacement or major ground movement. Based on the inland location of the proposed alignment, tsunamis do not pose a hazard to the proposed alignment. Additionally, the proposed project would implement BMPs to ensure flows from the project site would not release pollutants into downstream receiving waters. Therefore, impacts associated with risk of release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone would be less than significant.

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

Less-Than-Significant Impact. The proposed project would comply with regional and local regulations requiring preparation of an SWPPP, and would not obstruct existing water quality control plans or groundwater sustainable management plans. In addition, the proposed project is not considered a suitable site for groundwater recharge and would not introduce impervious areas over a significant groundwater recharge zone. Therefore, impacts associated with conflict with a water quality control plan or sustainable groundwater management plan would be less than significant.

3.11 Land Use and Planning

a) Would the project physically divide an established community?

No Impact. The proposed project would be located entirely underground; therefore, the project would not physically divide an established community and there would be no impact.

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

Less-Than-Significant Impact. As discussed in Section 2.2, Environmental Setting, a portion of the proposed alignment is located within the TOD Zone on W Crowther Avenue (as shown in Figure 1). The TOD Zone is a planned redevelopment area within the City, which includes the rezoning of residential and industrial areas to multifamily residential. The City Council approved the TOD Zoning Text Amendment, General Plan Amendment, and supporting document on April 4, 2017. According to the SMP, the redevelopment planned within the TOD Zone would result in increased sewer flows to the existing collection system. As such, the proposed project would serve the increased capacity generated by redevelopment in the TOD Zone. The proposed alignment does cross several jurisdictions; however, as discussed in Section 2.5, the appropriate permits and approvals would be obtained from these jurisdictions to ensure the proposed project complies with plans, policies, and regulations. In addition, the proposed project would be located below ground and would not interfere with current land uses or zoning. Thus, the proposed project would not cause a significant environmental impact due to conflict with a land use plan. Therefore, impacts associated with construction of the proposed sewer pipeline on land use would be less than significant.

3.12 Mineral Resources

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. According to the County of Orange General Plan Resources Element, significant sand and gravel resources within the Orange County region are located in portions of the Santa Ana River, Santiago Creek, San Juan Creek, and Arroyo Trabuco. Figure VI-3, the Mineral Resources Map, of the General Plan does not identify mineral resource areas around the project site. The nearest mineral resource area is along the Santa Ana River located approximately 1.8 miles southeast of the project site (County of Orange 2012).

Additionally, the California Department of Conservation, Division of Mines and Geology identifies the project area as MRZ-1, which is used to define areas where adequate information indicates that no significant construction aggregate deposits are present, or where it is judged that little likelihood exists for their presence (CGS 1981). Therefore, the proposed project would not result in the loss of known mineral resources and there would be no impact.

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 discussed in Section 3.12(a), no regional significant aggregate resources are located within the vicinity of the project site. No mineral extraction activities occur on or adjacent to the project site, and no known mineral resources are present on site. Therefore, no impacts associated with the loss of availability of a locally important mineral resource recovery site would occur.

3.13 Noise

Noise is defined as unwanted sound. Sound may be described in terms of level or amplitude (measured in decibels), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the amplitude of sound is the decibel (dB). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear. Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise, on a community. These descriptors include the equivalent noise level over a given period (L_{eq}), the statistical sound level, the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA. Table 8 provides examples of A-weighted noise levels from common sounds. In general, human sound perception is such that a

change in sound level of 3 dB is barely noticeable; a change of 5 dB is clearly noticeable; and a change of 10 dB is perceived as doubling or halving of the sound level.

Table 8. Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural night time	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013a.
Note: dBA = A-weighted decibel.

L_{eq} is a sound energy level averaged over a specified period (typically no less than 15 minutes for environmental studies). L_{eq} is a single numerical value that represents the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors. L_{max} is the greatest sound level measured during a designated time interval or event.

Unlike the L_{eq} metrics, L_{dn} and CNEL metrics always represent 24-hour periods, usually on an annualized basis. L_{dn} and CNEL also differ from L_{eq} because they apply a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). "Time weighted" refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m.–7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m.–10:00 p.m.) is penalized by adding 5 dB, while noise occurring during the nighttime (10:00 p.m.–7:00 a.m.) is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is defined as 7:00 a.m.–10:00 p.m., thus eliminating the evening period. L_{dn} and CNEL are the predominant criteria used to measure

roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 dB to 1 dB and as such, are often treated as equivalent to one another.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earthmoving equipment.

Several different methods are used to quantify vibration. Peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches/second. The root mean square amplitude is most frequently used to describe the effect of vibration on the human body, and is defined as the average of the squared amplitude of the signal. Decibel notation is commonly used to measure root mean square. The decibel notation acts to compress the range of numbers required to describe vibration.

High levels of vibration may cause physical personal injury or damage to buildings. However, vibration levels rarely affect human health. Instead, most people consider vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of vibration can damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes). Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Sensitive Receptors

Noise- and vibration-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise and vibration sensitive, and may warrant unique measures to protect from intruding noise. Sensitive receptors near the project site include residential uses located to the north of the project alignment (at Goetz Place and Evelyn Place) and southeast of the project alignment (at Placentia Avenue and West Orangethorpe Avenue). These sensitive receptors represent the nearest sensitive land uses with the potential to be impacted by construction of the proposed project.

Existing Noise Conditions

Noise measurements were conducted near the project site on December 18, 2018, to characterize the existing noise levels (Figure 8, Noise Measurement Locations). Table 9 provides the location, date, and time the noise

measurements were taken. The noise measurements were taken using a Soft dB Piccolo sound-level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound-level meter meets the current American National Standards Institute standard for a Type 2 (General Use) sound-level meter. The accuracy of the sound-level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Table 9. Measured Noise Levels

Receptors	Location	Date	Time	L_{eq} (dBA)	L_{max} (dBA)
M1	Southeast of project alignment, adjacent to West Orangethorpe Avenue and mobile home park.	12/18/18	9:41 a.m. to 9:56 a.m.	77.6	88.4
M2	East of project alignment, adjacent to Placentia Avenue and commercial office building.	12/18/18	10:18 a.m. to 10:33 a.m.	73	84.4
M3	South of project alignment, adjacent to Placentia Avenue and Goetz Place, and single-family residence.	12/18/18	10:51 a.m. to 11:06 a.m.	75.9	89.8
M4	South of project alignment, adjacent to Placentia Avenue and Evelyn Place, and single-family residence.	12/18/18	11:08 a.m. to 11:23 a.m.	75.1	87.3

Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels.

Four short-term noise measurement locations (M1 through M4) were conducted adjacent to the project alignment. M1 represents the existing ambient noise levels in and around the mobile home community southwest of West Orangethorpe Avenue and Placentia Avenue. M2 is located along the east side of Placentia Avenue, and represents ambient noise levels at the commercial office buildings in the area. M3 and M4 were located immediately north of Crowther Avenue at Goetz Place and Evelyn Place, respectively, and represent existing ambient noise levels at the residences located there. Table 9 provides the measured energy-averaged (L_{eq}) and maximum (L_{max}) noise levels for these locations. The field noise measurement data sheets are provided in Appendix E. The primary noise sources at the sites identified in Table 9 consisted of traffic on West Orangethorpe Avenue, Placentia Avenue, and Crowther Avenue, as well as the nearby SR-57 freeway. As shown in Table 9, the measured sound levels ranged from approximately 73 dBA to 78 dBA L_{eq}.

Regulatory Setting

City of Placentia

The project site is located within the City of Placentia, as are the existing residences north and southeast of the project site. The City outlines its noise regulations and standards as they pertain to the proposed project

(which is limited to construction noise) in its municipal code (City of Placentia 1975). Specifically, the City establishes stationary source noise limits in Chapter 23.76 (Noise Control).

Stationary Source Noise Regulation

The City has implemented exterior stationary noise limits for offending stationary noise sources (i.e., non-transportation noise sources by Noise Zone. Noise Zones are defined by land use type; all residential land uses are designated as Noise Zone 1; all commercial land uses are designated as Noise Zone 2; and all industrial land uses are designated as Noise Zone 3.

Table 10. City of Placentia Noise Ordinance Exterior Noise Standards

Noise Zone	Noise Level (dBA)	Time Period
1	55	7:00 a.m. to 10:00 p.m.
	50	10:00 p.m. to 7:00 a.m.
2	65	Anytime
3	70	Anytime

Source: City of Placentia 1975, Section 23.76.050.
Notes: dBA = A-weighted decibels.

Construction Noise Regulation

Per City of Placentia Code Section 23.76.070(8), construction noise is exempted from the noise standards shown in Table 10, provided that the construction takes place between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 9:00 a.m. and 6 p.m. on Saturdays; construction is prohibited on Sundays and holidays.

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?

On-site noise-generating activities associated with the proposed project would include short-term construction activities. The proposed project would not generate operational noise, off-site traffic noise along local roadways, or noise from other sources.

Short-Term Construction Impacts

Less-Than-Significant Impact With Mitigation Incorporated. Construction noise and vibration levels are temporary phenomena, which can vary from hour to hour and day to day, depending on the equipment in use, the operations being performed, and the distance between the source and receptor.

Equipment that would be in operation during proposed construction would include, in part, excavators, concrete saws, compressors, welders, and paving equipment. Table 11 presents typical maximum noise

levels for various pieces of construction equipment at a distance of 50 feet (note that these are maximum noise levels). Typically, construction equipment operates in alternating cycles of full power and low power, producing average noise levels less than the maximum noise level presented in Table 11. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 11. Typical Construction Equipment Noise Emission Levels

Equipment	Typical Sound Level (dBA) 50 Feet from Source
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
Truck	88

Source: FTA 2006.
Note: dBA = A-weighted decibels.

For the equipment typically used to complete a development project such as the proposed project, the maximum noise levels at 50 feet would be approximately 89 dBA, although the hourly noise levels would vary. Construction noise in a well-defined area typically attenuates at approximately 6 dB per doubling of distance. Project construction would take place within approximately 55 feet of the nearest noise-sensitive land uses (residences to the north). Because of the linear nature of the project, the amount of time that construction work would occur immediately adjacent to any one noise-sensitive receiver would generally be relatively short (typically, 1 to 2 days for open-trench pipeline installation). Furthermore, the length of time that open-trench pipeline construction work would be in general proximity (i.e., within several hundred feet) of any one noise-sensitive receiver would be 1 week or less.

The Federal Highway Administration's Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels. Although the model was funded and promulgated by the Federal Highway Administration, the RCNM is often used for non-roadway projects because the same types of construction equipment used for roadway projects are often used for other types of construction. Input variables for the RCNM consist of the receiver/land use types, the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of hours the equipment typically works per day), and the distance from the noise-sensitive receiver. No topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis.

Construction scenario assumptions, including phasing and equipment mix, were based on the project construction details described in Section 3.3, and when proposed project specifics were not known, on the CalEEMod default values developed for the air quality and GHG emissions impacts analysis. Construction noise levels were assessed at two distances for each project phase. The first represents the anticipated construction noise that may be experienced at the nearest sensitive receptor (residences nearest to the proposed alignment for the open trench work, and commercial uses nearest to the proposed alignment for the trenchless work[6]). The second represents anticipated construction noise that may be experienced within the general vicinity of construction. Tables 12 and 13 summarize these estimated construction noise levels for open-trench construction and trenchless construction respectively, with separate calculations provided for the different types of construction activities that would occur for this project. The RCNM inputs and outputs are provided in Appendix E.

Table 12. Construction Noise Model Results Summary – Open-Trench Construction

Construction Phase	Construction Noise at Representative Receiver Distances (L_{eq} (dBA))	
	Nearest Source / Noise-Sensitive Receiver Distance (100 feet)	*Typical Source / Noise-Sensitive Receiver Distance (200 feet)*
Demolition	82	71
Trenching	76	65
Pipeline Installation	67	56
Backfill and Grading	79	68
Paving	75	64
Architectural Coating	73	62

Notes: L_{eq} = equivalent sound level; dBA = A-weighted decibel.

6 Trenchless construction work is proposed at the BNSF ROW and the OCPW storm drain channel west of SR-57. Because residential land uses are located more than 500 feet from these locations, the nearest commercial land uses (located to the south of the BNSF ROW), were analyzed.

As shown in Table 12, the construction noise levels at the nearest noise-sensitive land uses (existing residences located north of Crowther Avenue) are predicted to range from approximately 67 to 82 dBA L_{eq} when open-trench construction would take place adjacent to the property. More typically, when construction would occur in the vicinity but not immediately adjacent, noise levels would range from approximately 56 to 71 dBA L_{eq}.

Table 13. Construction Noise Model Results Summary – Trenchless Construction

Construction Phase	Construction Noise at Representative Receiver Distances (L_{eq} (dBA))	
	Nearest Source / Noise-Sensitive Receiver Distance (100 feet)	*Typical Source / Noise-Sensitive Receiver Distance (200 feet)*
Demolition	77	71
Trenching	71	65
Pipeline Installation	62	56
Backfill and Grading	74	68
Paving	70	64
Architectural Coating	68	62

Notes: L_{eq} = equivalent sound level; dBA = A-weighted decibel.

As shown in Table 13, construction noise levels at the nearest noise-sensitive land uses (commercial offices located east of Placentia Avenue) are predicted to range from approximately 62 to 77 dBA L_{eq} when trenchless construction would take place adjacent to the property. More typically, when construction would occur in the vicinity but not immediately adjacent, noise levels would range from approximately 56 to 71 dBA L_{eq}.

As previously discussed, the City of Placentia Municipal Code exempts construction noise from the City's stationary noise standards, provided that the construction takes place between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 9:00 a.m. and 6 p.m. on Saturdays; construction is prohibited on Sundays and holidays. It is anticipated that construction activities associated with the proposed project would take place exclusively within the permitted hours.

Although nearby residences would be exposed to construction noise levels that would be audible at times, the exposure would be short term and would cease upon completion of project construction. Project-related construction noise would not violate the City's standards for construction noise. Therefore, short-term construction impacts associated with an exceedance of applicable noise standards would be less than significant.

However, construction noise levels would be higher at times than existing ambient daytime noise levels, particularly within proximity of the proposed construction activities (see Tables 8 and 12). Therefore, noise impacts from construction would be considered potentially significant. However, MM-NOI-1 (Construction Noise Reduction) and MM-NOI-2 (Notification) have been established to

reduce construction noise associated with the proposed project and to ensure that nearby receptors are informed of construction activities. The effectiveness of the measures listed in MM-NOI-1 would vary from several decibels (which in general is a relatively small change) to 10 or more decibels (which would be perceived as a substantial change). The range of effectiveness would vary based on various factors, including the equipment in use, the original condition of the equipment, the specific location of the noise source and receiver, and others. Installation of a temporary noise barrier, for example, would vary in effectiveness depending upon the degree to which the line-of-sight between the source and receiver is broken. The noise reduction achieved by a barrier typically ranges from 5 to 10 dB. The noise reduction achieved by equipment silencers would range from several decibels to well over 10 decibels. Limiting equipment idling could reduce overall noise levels up to several decibels. However, the measures listed in MM-NOI-1, when applied in conjunction, would result in a substantial decrease in construction noise. Additionally, while MM-NOI-2 would not reduce construction noise levels, it would ensure that receptors in the project area are prepared for any nuisances that may occur, and would allow them to plan accordingly. Upon implementation of MM-NOI-1 and MM-NOI-2, impacts would be less than significant.

MM-NOI-1

The City of Placentia and/or its construction contractor shall comply with the following measures during construction:

1. Construction activities shall be permitted only during the following time periods: the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, between 9:00 a.m. and 6 p.m. on Saturday, and shall be prohibited on Sundays and holidays. In the event that construction is required to extend beyond these times, extended hours permits shall be required.
2. Pumps and associated equipment (e.g., portable generators) shall be shielded from sensitive uses using local temporary noise barriers or enclosures, or shall otherwise be designed or configured so as to minimize noise at nearby noise-sensitive receivers.
3. Staging of construction equipment shall not occur within 20 feet of any noise- or vibration-sensitive land uses.
4. All noise-producing equipment and vehicles using internal combustion engines shall be equipped with mufflers; air-inlet silencers where appropriate; and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.
5. All mobile or fixed noise-producing equipment used for the project that are regulated for noise output by a local, state, or federal agency shall be in compliance with regulations.

6. Idling equipment shall be kept to a minimum, and moved as far as practicable from noise-sensitive land uses.
7. Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.
8. Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.
9. The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be used for safety warning purposes only.

MM-NOI-2

Effective communication with local residents shall be maintained prior to and during construction. Specifically, the City of Placentia shall inform local residents of the schedule, duration, and progress of the construction. Additionally, residents shall be provided contact information for noise- or vibration-related complaints.

Long-Term Operational Impacts

No Impact. Upon completion of project construction activities, no operational noise would occur. Operation of the replaced pipelines would be belowground and would be passive in nature (i.e., no pumps or other mechanized equipment other than for minimal maintenance activities, as occurs under existing conditions). Thus, there would be no impact related to operational noise.

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

Less-Than-Significant Impact. Construction activities have the potential to expose persons to excessive ground-borne vibration or ground-borne noise. Caltrans has collected ground-borne vibration information related to construction activities indicating that continuous vibrations with a PPV of approximately 0.1 inches/second begin to annoy people (Caltrans 2013b). The heavier pieces of construction equipment, such as an excavator, would have PPVs of approximately 0.089 inches/second or less at a distance of 25 feet (FTA 2006). Ground-borne vibration is typically attenuated over short distances. At the distance from the nearest residences to the proposed project site (approximately 55 feet), and with the anticipated construction equipment, the PPV vibration level would be approximately 0.0273 inches/second. This vibration level would be well below the vibration threshold of potential annoyance of 0.1 inches/second.

The major concern with regard to construction vibration is related to building damage. Construction vibration as a result of the proposed project would not result in structural building damage, which

typically occurs at vibration levels of 0.5 inches/second or greater for buildings of reinforced-concrete, steel, or timber construction. The heavier pieces of construction equipment used would include typical construction equipment for this type of project, such as backhoes, front-end loaders, and flatbed trucks. Pile driving, blasting, and other special construction techniques would not be used for construction of the proposed project; therefore, excessive ground-borne vibration and ground-borne noise would not be generated. Vibration levels from project construction would be less than the thresholds of annoyance and potential for structural damage. Operation of the proposed project would not result in any sources of vibration. Therefore, impacts would be less than significant.

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

No Impact. The closest public airport to the project site is Fullerton Municipal Airport, which is located approximately 5.5 miles northwest of the project site in the City of Fullerton. The airport is owned and operated by the City of Fullerton as a general aviation facility. According to the Orange County's Airport Environs Land Use Plan for Fullerton Municipal Airport (ALUC 2004), the airport's ultimate noise contours indicates that the 65 dBA CNEL noise contour would be located approximately 5.4 miles from the project site. No private airstrips are located within the broader vicinity of the City (AirNav.com 2018). Thus, air traffic noise associated with the airport would not expose construction workers or City employees to excessive noise levels. Therefore, no impacts associated with public airport and air traffic noise would occur.

3.14 Population and Housing

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

Less-Than-Significant Impact. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. It is anticipated that construction workers would come from the surrounding region and would not induce population growth or require permanent housing. Once completed, no housing is proposed and no additional employees would be required.

The proposed project would increase the capacity of the current collection system to accommodate redevelopment plans within the TOD Zone and the projected increase in sewer flows upon build out of the TOD Zone. The TOD Zone is a planned redevelopment area within the City, which includes the rezoning of residential and industrial areas to multifamily residential. The City Council approved the TOD Zoning Text Amendment, General Plan Amendment, and supporting documentation on

April 4, 2017, which would allow for population growth in the TOD Zone. Additionally, the population growth anticipated as part of the TOD Zone has been disclosed within the IS prepared for the City in February 2018. As such, the proposed project would accommodate the growth resulting from the previously approved TOD Development Standards, and the proposed sewer line itself would not generate population growth. The project is proposed to meet existing deficiencies in the system, and as such, would not be considered growth inducing. Therefore, direct and indirect growth impacts would be less than significant.

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

No Impact. The proposed project would be located within existing street ROWs and easements, and would not require the demolition or alteration of existing housing. The proposed project would not displace people or require replacement housing. Therefore, people and housing would not be displaced, and no impact would occur.

3.15 Public Services

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

Fire protection?

Less-Than-Significant Impact. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed project would not induce population growth nor result in the addition of housing, schools, or other community facilities that might require fire protection (see Section 3.14(a)). Construction of the new sewer pipeline would not change local fire protection response times or affect demand for fire protection services in the project area. Therefore, impacts to fire protection services are considered less than significant.

Police protection?

Less-Than-Significant Impact. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed project would not induce population growth nor result in the addition of housing, schools, or other community facilities that might require police protection (see Section 3.14(a)). Construction of the proposed project would not change local police protection or emergency vehicle response times or affect demand for police protection services in the project area. Therefore, impacts to police protection services are considered less than significant.

Schools?

No Impact. The proposed project would not involve a housing component that would result in population growth and increased demands on existing schools within the area. Therefore, no impact to schools would occur.

Parks?

No Impact. The proposed project would not involve a housing component or increase employment that would result in population growth. Therefore, additional demands on existing public parks would not occur as a result of project implementation, and no impact would occur.

Other public facilities?

No Impact. The proposed project would not involve a housing component or increase employment opportunities that would result in population growth within the City. Therefore, additional demands on other public facilities, such as library or health care services would not occur as a result of project implementation.

3.16 Recreation

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

No Impact. The proposed project would not involve a housing component or substantially increase employment opportunities within the City because the construction would be short term and temporary, and construction workers are anticipated to come from the surrounding area; therefore, the proposed project would not substantially increase the use of existing neighborhood and regional parks or other recreational facilities. No impacts would occur.

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

No Impact. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed project would not include the construction of a recreational facility that could have an adverse effect on the environment. In addition, the proposed project would not induce population growth such that the expansion of existing recreational facilities is required. Therefore, no impacts associated with the construction or expansion of recreational facilities would occur.

3.17 Transportation

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

Construction Traffic

Less-Than-Significant Impact. Construction is expected to take approximately 6 months to complete, beginning in June 2019 and ending in December 2019, and include both open-trench and trenchless construction phases. The peak construction period was analyzed assuming that overlap of all phases would occur at one time, and that construction would occur for 8 hours each day. In the event that construction is required to extend beyond these times, extended hours permits may be required. Approval from the City of Placentia, Orange County, and Caltrans would be required for nighttime and/or weekend work within their respective jurisdictions. Traffic generated by the construction phase of the proposed project would be temporary, and this traffic would cease once construction is completed, and pre-project traffic conditions would return.

Table 14 provides the proposed project's construction trip generation estimates with and without passenger car equivalents (PCE) based on the maximum number of construction workers, as well as vendor and haul trucks for the peak construction phase.

Table 14. Peak Construction Trip Generation Summary

Vehicle Type	Daily Quantity		Daily Trips	AM Peak Hour			PM Peak Hour		
				In	*Out*	*Total*	*In*	*Out*	*Total*
Trip Generation									
Open-Trench Construction									
Construction Workers	29	Workers	58	29	0	29	0	29	29
Vendor Trucks	10	Trucks	20	1	2	3	1	2	3
Haul Trucks[1]	16	Trucks	32	2	2	4	2	2	4
Subtotal Open Trench			110	32	4	36	3	33	36
Trenchless Construction									
Construction Workers	31	Workers	62	31	0	31	0	31	31
Vendor Trucks	2	Trucks	4	1	1	2	1	1	2
Haul Trucks[1]	1	Trucks	2	1	0	1	0	1	1
Subtotal Trenchless			*68*	*33*	*1*	*34*	*1*	*33*	*34*
Total			**178**	**65**	**5**	**70**	**4**	**66**	**70**

Table 14. Peak Construction Trip Generation Summary

Vehicle Type	Daily Quantity		Daily Trips	AM Peak Hour			PM Peak Hour		
				In	*Out*	*Total*	*In*	*Out*	*Total*
Trip Generation (w/PCE)									
Open-Trench Construction									
Construction Workers (1.0 PCE)	29	Workers	58	29	0	29	0	29	29
Vendor Trucks (2.0 PCE)	10	Trucks	40	2	4	6	2	4	6
Haul Trucks (3.0 PCE)	16	Trucks	96	6	6	12	6	6	12
Subtotal Open Trench (w/PCE)			*194*	*37*	*10*	*47*	*8*	*39*	*47*
Trenchless Construction									
Construction Workers (1.0 PCE)	31	Workers	62	31	0	31	0	31	31
Vendor Trucks (2.0 PCE)	2	Trucks	8	2	2	4	2	2	4
Haul Trucks (3.0 PCE)	1	Trucks	6	3	0	3	0	3	3
Subtotal Trenchless (w/PCE)			*76*	*36*	*2*	*38*	*2*	*36*	*38*
Total (w/PCE)			**270**	**73**	**12**	**85**	**10**	**75**	**85**

Notes:
PCE = passenger car equivalents.
The number of one-way haul trips is estimated to total 2,368 trips throughout all open-trench construction phases and 54 trips throughout all trenchless construction phases. A daily quantity of 16 trips per day for open-trench construction and at least 1 trip per day for trenchless construction is assumed for the purposes of this analysis considering the construction period lasts from 6/1/29–12/31/19 (154 week days).

As shown in Table 14, the peak construction phase of the project is expected to generate a total of approximately 178 daily trips, 70 AM peak-hour trips (65 inbound and 5 outbound), and 70 PM peak-hour trips (4 inbound and 66 outbound). With the application of PCE factors to truck trips, the peak construction phase of the project would generate 270 PCE daily trips, with 85 PCE trips during the AM peak hour (73 inbound and 12 outbound) and 85 PCE trips during the PM peak hour (10 inbound and 75 outbound).

Trip generation estimates of the peak construction phase include traffic destined to/from the site; however, it should be noted that trenchless and open-trench construction activities would not occur simultaneously in the same work area along the alignment. Therefore, the total trip generation estimates for both open trench and trenchless phases would not be concentrated in one particular area of the project site; rather, trips would be spread out across the length of the pipeline. Additionally, although the maximum length of the trench that can be opened or partially opened at any one time would not exceed 400 linear feet, the work area is likely to extend along a larger portion of the pipeline. For example, demolition and architectural coating phases (see Tables 3 and 4 in Section 3.3) would

not be concurrent considering line striping (architectural coating) would only occur after sections of the trench are closed and paved. Traffic generated by the peak construction phase of the project would be temporary, and this traffic would cease once construction of the proposed project is completed.

Additionally, the 2017 Orange County Congestion Management Program (CMP) requires evaluation of all CMP arterial monitoring intersections and arterials where the project would add 2,400 or more daily trips for projects adjacent to the CMP Highway System, and 1,600 or more daily trips for projects that directly access the CMP Highway System (OCTA 2017). In the City of Placentia near the proposed project, Orangethorpe Avenue is included on the CMP Highway System, and the intersections of SR-57 northbound ramps/Orangethorpe Avenue and SR-57 southbound ramps are designated as CMP intersections (City of Placentia 2003). As shown in Table 14, the maximum amount of daily trips that would occur at one time, assuming open-trench and trenchless construction occurred simultaneously, is 178 daily trips (270 PCE daily trips)—well below the threshold set by the CMP. Thus, the impact of construction traffic would be less than significant.

Operation and Maintenance

Less-Than-Significant Impact. No new staff would be required for maintenance or operation of the pipeline on a daily basis; therefore, no new trips would be generated during the operation and maintenance of the pipeline. Any traffic currently generated by the operations and maintenance of the pipeline would occur on an occasional, or as-needed, basis.

b) Would the project conflict or be inconsistent with the CEQA Guidelines section 150464.3, subdivision (b)?

CEQA Guidelines Section 15064.3, subdivision (b), focuses on specific criteria (vehicle miles traveled), for determining the significance of transportation impacts. It is further divided into four subdivisions: (1) land use projects, (2) transportation projects, (3) qualitative analysis, and (4) methodology. The proposed project, a sewer pipeline project that would generate temporary construction-related traffic and nominal operations and maintenance traffic, would be categorized under subdivision (b)(3), qualitative analysis. Subdivision (b)(3) recognizes that lead agencies may not be able to quantitatively estimate vehicle miles traveled for every project type. In those circumstances, this subdivision encourages lead agencies to evaluate factors such as the availability of transit, proximity to other destinations, and other factors that may affect the amount of driving required by the project.

Construction

Less-Than-Significant Impact. As described previously, construction of the proposed project would result in a temporary increase in local traffic as a result of construction-related workforce traffic and material deliveries, and construction activities occurring within the public ROW. The primary off-site impacts from the movement of construction trucks would include short-term and intermittent effects

on traffic operations because of slower movements and larger turning radii of the trucks compared to passenger vehicles. However, the majority of the proposed sewer pipeline is located close to major arterials and freeways, including SR-57 and SR-91, and travel on local streets would be minimized.

Potential increases in vehicle trip generation as a result of proposed project construction would vary based on the construction activity, location, equipment needs, and other factors. However, once construction is completed, construction-related traffic would cease and vehicle miles traveled levels would return to pre-project conditions. Therefore, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), and impacts would be less than significant.

Operation and Maintenance

Less-Than-Significant Impact. No new staff would be required for maintenance or operation of the pipeline; therefore, no increase in vehicle miles traveled would occur. Therefore, impacts would be less than significant.

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)?

Construction

Less-Than-Significant Impact With Mitigation Incorporated. As discussed in Section 2.4, Project Construction, proposed construction would occur in a linear fashion within one lane of traffic (approximately 12-feet wide). Excavation equipment would straddle the trench and deposit spoil material into trucks for storage outside the roadway or stockpiled behind the open trench within the closed traffic lane. PVC piping would be staged alongside the pipeline alignment. During construction, lane closures, detours, driveway blockages, loss of parking, and disruptions to traffic, transit, bicycle, and pedestrian movement would occur in and around Crowther Avenue, Placentia Avenue, Orangethorpe Avenue, and State College Boulevard where the sewer pipeline would be installed. This may result in a potentially significant safety hazard to construction workers and/or the public; therefore, mitigation would be required.

As noted above, the proposed project would have the potential to obstruct portions of the roadways while a lane is closed for pipeline installation. However, incorporation of a Construction Traffic Management Plan (MM-TRA-1) and associated Traffic Control Plans would ensure that any temporary lane closures, blockages, or general disruptions to traffic flow would be designed to allow acceptable levels of service and traffic safety around the site during construction.

MM-TRA-1

Prior to the start of construction activities, the contractor in coordination with the City of Placentia shall prepare a Construction Traffic Management Plan and associated Traffic Control Plans prior to beginning construction of the Project. The plan shall recommend measures to avoid impacts to existing transportation, circulation and parking conditions. These measures shall include but shall not be limited to:

- Circulation and detour plans to minimize impact to local street circulation, including sidewalks and bike paths. This may include the use of signing and flagging to guide vehicles, pedestrians and cyclists around the construction zone.
- Identification of hours of construction and hours of deliveries, to avoid the AM and PM peak hours to minimize disturbance on traffic flow.
- Identification of limits on the length of open trench, work area delineation, traffic control, flagging, and signage requirements.
- Identification of all access and parking restrictions in the work areas.
- Maintenance of access and minimize disruption to residence and business driveways at all times to the extent feasible.
- Prior to the start of construction, establishing a layout plan and a process for communication with the residents, and businesses that may be impacted. Advance public notification shall include posting of notices and appropriate signage of construction activities.
- Consult with Orange County Transportation Authority (OCTA) prior to construction within roadways or right-of-way that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of transit service.
- Determine if bicycle or pedestrian facilities would be impacted by construction activities of respective projects within the Project. This determination shall inform the circulation and detour plans included in the Traffic Management/Control Plan to minimize potential impacts to alternative transportation modes and systems.

Implementation of MM-TRA-1 would reduce potential impacts to a level below significance.

Operation and Maintenance

Less-Than-Significant Impact. Once operational, the maintenance and repair of the proposed project would likely be similar in nature as currently occurring for the existing pipeline. Therefore, impacts would be less than significant.

d) Would the project result in inadequate emergency access?

Construction

Less-Than-Significant Impact With Mitigation Incorporated. As previously discussed, construction vehicles would temporarily access the project site via Crowther Avenue, Placentia Avenue, Orangethorpe Avenue, State College Boulevard, and other local roadways. The proposed project would have the potential to obstruct portions of the aforementioned roadways during pipeline trenching and installation. However, incorporation of MM-TRAF-1 as described in Section 3.17(c) would ensure that any temporary impacts to emergency vehicle flow and/or ingress/egress to facilities is coordinated in advance with emergency service providers and law enforcement to ensure that provision of sufficient emergency service, access, and evacuation can occur during construction if necessary. Implementation of MM-TRAF-1 would prevent potentially significant impacts to local emergency service providers.

Operation and Maintenance

Less-Than-Significant Impact. Once operational, the proposed project would not include any impediments to emergency access. Additionally, vehicular trips for maintenance and repair during operation of the facility would be similar in quantity and nature as currently occurring for the existing pipeline. Therefore, impacts to emergency access would be less than significant.

3.18 Tribal Cultural Resources

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)?

No Impact. As previously addressed in Section 3.5, Cultural Resources, no historic built environment resources were identified within the project site as a result of the California Historical Resources Information System records search. The proposed project site is situated completely within the public ROW. One built environment resource, the NRHP-ineligible, State Historic Resources Inventory-listed Placentia Mutual Orange Association building, is sited on a property adjacent to, but outside of, the proposed alignment. The elevation of the building facing the proposed alignment is a minimum of 40 feet away and was altered previously by the removal of the original loading bays along the full elevation length and

insertion of inappropriate windows. The proposed project would not impact this built environment resources.

No tribal cultural resources (either listed or eligible for listing) were identified within the project site as a result of the California Historical Resources Information System records search, NAHC Sacred Lands File search, or Native American outreach efforts. Therefore, there would be no impacts associated with historical resources listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources.

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. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Less-Than-Significant Impact With Mitigation Incorporated. The Sacred Lands Files search conducted by the NAHC failed to indicate the presence of Native American cultural resources in the immediate project area. The NAHC provided a list of six Native American groups and individuals who may have knowledge of cultural resources in the project area. Letters were sent to each of the ten representatives on November 16, 2018, for any knowledge of resources in the project area.

In compliance with Assembly Bill 52, the City contacted all NAHC-listed California Native American tribal representatives that requested project notification pursuant to Assembly Bill 52 on November 18, 2018. Contacted individuals were Andrew Salas, Gabrieleño Band of Mission Indians – Kizh Nation; and Joyce Perry, Juaneño Band of Mission Indians-Acjachemen Nation. To date, the City received one response from Chairman Andrew Salas requesting consultation. Consultation with City staff was held on January 18, 2019 by phone. Mr. Andrew Gonzales represented the City. The Gabrieleño stated that the project location has a higher than normal probability to encounter tribal cultural resources due to proximity to tribal trade routes and water courses used by the tribe. Therefore, the tribe requested that a Native American monitor be present during ground disturbing activities.

MM-TRC-1

Prior to the issuance of any grading permits for the project, the City of Placentia Development Services Department shall ensure that the construction contractor provide access for Native American monitoring during ground-disturbing activities. This provision shall be included on project plans and specifications. The site shall be made accessible to any Native American tribe requesting to be present, provided adequate notice is given to the construction contractor

and that a construction safety hazard does not occur. The monitor(s) shall be approved by a local tribal representative and shall be present on site during the construction phases that involve any ground-disturbing activities. The monitor(s) shall possess Hazardous Waste Operations and Emergency Response (HAZWOPER) certification. In addition, the monitor(s) shall be required to provide insurance certificates, including liability insurance, for any archaeological resource(s) encountered during grading and excavation activities pertinent to the provisions outlined in the California Environmental Quality Act (California Public Resources Code, Section 21083.2(a)–(k)).

Neither the City of Placentia nor construction contractor shall be financially obligated for any monitoring activities. If evidence of any tribal cultural resources is found during ground-disturbing activities, the monitor(s) shall have the capacity to halt construction in the immediate vicinity of the find to recover and/or determine the appropriate plan of recovery for the resource. The recovery process shall not unreasonably delay the construction process.

Construction activity shall not be contingent on the presence or availability of a monitor, and construction may proceed regardless of whether or not a monitor is present on site. The on-site monitoring shall end when the project site grading and excavation activities are completed or when the monitor has indicated that the site has a low potential for archaeological resources.

Therefore, MM-TRC-1 is included to mitigate impacts to tribal cultural resources to less than significant levels.

3.19 Utilities and Service Systems

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 of which could cause significant environmental effects?

Water Facilities

No Impact. The proposed project would not generate water supply demand. As addressed in Section 3.14(a), the proposed project would not generate population growth and thus, would not require additional water supplies. Therefore, the proposed project would not require or result in the relocation or expansion of construction of new or expanded water facilities.

Wastewater Treatment Facilities

Less-Than-Significant Impact. The proposed project would increase capacity of the existing sewer line and connect to OCSD's Newhope–Placentia Trunk Sewer. Wastewater collected from OCSD is collected and treated at OCSD's wastewater treatment facilities, which are required to comply with waste discharge requirements of the Regional Water Quality Control Board's NPDES Permit

(RWQCB 2004). Wastewater discharge requirements from OCSD facilities are based on applicable state and federal regulations, policies, and guidance on effluent discharge to receiving waters.

The proposed project involves in the construction of a new sewer pipeline to replace the existing pipeline, in order to accommodate the anticipated increase in wastewater flows generated by redevelopment in the TOD Zone. However, the proposed project itself would not generate wastewater, since no development is proposed. In addition, coordination with OCSD would ensure the wastewater treatment requirements of the Regional Water Quality Control Board would continue to be met. Therefore wastewater treatment could be served by the existing OCSD facilities without the construction or expansion of facilities. Further, the proposed project itself would not generate wastewater. Therefore, impacts related to construction of new or expanded wastewater treatment facilities would be less than significant.

Stormwater Drainage Facilities

No Impact. The proposed project would construct a new sewage pipeline to replace the existing pipeline. The proposed project would be constructed within an existing paved roadway. As such, the proposed project would not result in new impervious areas, and would not substantially change the amount of stormwater runoff from the project site and surrounding area. Therefore, the proposed project would not require or result in the relocation or expansion of construction of new or expanded stormwater drainage facilities, and no impacts would occur.

Electric Power and Natural Gas Facilities

No Impact. As previously discussed in Section 3.6, Energy, no operational activities associated with the proposed project would occur (no routine daily equipment operation or vehicle trips would be required). Once complete, the proposed project would not require the use of electric power or natural gas. Additionally, the proposed sewer pipeline would continue to convey wastewater flows in the project area as is done under the current condition. Therefore, no impacts would occur.

Telecommunications Facilities

No Impact. The proposed project would not generate population growth and thus, would not require telecommunications facilities. The proposed project involves the construction of a sewer pipeline, which does involve habitable structures. Further, the proposed project is in a largely developed area. Therefore, no impacts related to telecommunication facilities would occur.

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. The proposed project would not generate demand for water supply. As addressed in Section 3.14(a), the proposed project would not generate population growth and thus, would not require additional water supplies. The proposed sewer pipeline would continue to convey wastewater flows in the project area as is done under the current condition. Therefore, no impacts related to water supplies would occur.

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

Less-Than-Significant Impact. The proposed project involves in the construction of a new sewer pipeline to replace the existing pipeline, in order to accommodate the anticipated increase in wastewater flows generated by redevelopment in the TOD Zone. The new sewer pipeline would connect to OCSD's Newhope–Placentia Trunk Sewer, and the existing pipeline's connection to OCSD facilities would be abandoned in place. Prior to connecting to OCSD's facilities, the proposed project is required to obtain a Trunk Connection Permit from OCSD, which are issued to cities, and local sewer and water agencies within OCSD's service boundary for connection to regional OCSD sewer manholes. Engineering plans showing the proposed connection plan would be submitted and approved by OCSD to ensure that OCSD has adequate capacity to serve the proposed project. Therefore, impacts would be less than significant.

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 proposed project, once complete, would not require solid waste material disposal. The existing sewer would be abandoned in place, and waste generated during construction would be minimal. In addition, waste would be disposed of in accordance with all applicable laws and regulations. Therefore, impacts related to solid waste disposal would be less than significant.

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

Less-Than-Significant Impact. The proposed project would only generate waste during project construction. The construction contractor would be required to dispose of all construction waste per standard City specifications as well as any applicable federal and state requirements. Therefore, impacts would be less than significant.

3.20 Wildfire

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. According to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zones maps, the project site is neither moderately, highly, or very highly susceptible to wildland fire (CAL FIRE 2011). Upon completion of construction, the project site would be restored to its preconstruction conditions, and therefore, would not interfere with an emergency response plan or emergency evacuation plan**.** Therefore, no impacts would occur.

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. As previously addressed in Section 3.20(a), the project site is not located in a high fire hazard severity zone. The area surrounding the project site is generally urbanized and developed. There are no designated open space areas surrounding the project site. Land uses surrounding the proposed alignment include industrial, commercial, and some residential. Additionally, the proposed project involves the construction of a sewer line and does not involve a construction habitable structure, which would include project occupants. Therefore, no impacts would occur.

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

No Impact. The proposed project is located within an urban area and is not susceptible to fire risk. In addition, the proposed project would not result in the installation or maintenance of roads, fuel breaks, emergency water sources, or power lines. Although the project itself involves the construction of utilities, there is not the potential for exacerbating fire risk. Therefore, no impacts would occur.

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. As previously addressed in Section 3.20(a), the project site is not located in a high fire hazard severity zone. The proposed project is located on a generally level, built-out area and is not at risk of landslides or slope instability. Additionally, the proposed project does not involve the construction of structures that would be inhabited by people. Therefore, no impacts would occur.

3.21 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?

Less-Than-Significant Impact With Mitigation Incorporated. The project site is entirely developed and disturbed. No natural vegetation communities are present within the proposed alignment and there is a limited number of wildlife species within the project site and surrounding area. The project site does not support wildlife corridors or habitat linkages. However, the project site contains trees and shrubs that may be used by migratory birds for breeding and nesting. Therefore, a preconstruction nesting bird survey and biological monitoring would be conducted within 1 week of vegetation clearing, cutting, or removal activities during the breeding/nesting season for native birds to ensure direct and indirect impacts to nesting birds would not occur (MM-BIO-1). With implementation of MM-BIO-1, the proposed project would not result in impacts to wildlife populations.

The proposed alignment is located adjacent to the existing pipeline, which has previously disturbed subsurface soils. In addition, results of the California Historical Resources Information System records search and NAHC Sacred Files Land Search did not identify any known archaeological resources in the project area. Therefore, the area is considered to be of low sensitivity for encountering archaeological deposits. Despite the low probability of encountering archaeological deposits, it is possible that such deposits exist subsurface. For this reason, the project site will be treated as potentially sensitive for archaeological resources. MM-CUL-1 is included to reduce potential impacts to unanticipated archaeological resources to less than significant. With the incorporation of mitigation, impacts associated with archaeological resources would be less than significant.

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 With Mitigation Incorporated. As addressed throughout this IS/MND, the proposed project would have no impact, a less-than-significant impact, or a less-than-significant impact with mitigation incorporated with respect to all environmental impact areas. The proposed project involves the construction of a new sewer pipeline within an existing roadway. Upon completion of the proposed project, there would be no operations associated. Therefore, no long-term significant impacts are associated with the proposed project, and no cumulatively considerable impacts would result.

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

Less-Than-Significant Impact With Mitigation Incorporated. As evaluated throughout this document, with incorporation of mitigation, environmental impacts associated with the proposed project would be reduced to less-than-significant levels. Thus, the proposed project would not directly or indirectly cause substantial adverse effects on human beings. Impacts would be less than significant with incorporation of mitigation.

4 REFERENCES AND PREPARERS

4.1 References Cited

14 CCR 15000–15387 and Appendices A through L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

40 CFR 93.123. 2011. Procedures for Determining Localized CO, PM10, and PM2 Concentrations (hot-spot analysis). Ch. 1. https://www.gpo.gov/ fdsys/pkg/CFR-2011-title40-vol20/pdf/CFR-2011-title40-vol20-sec93-123.pdf.

Airnav.com. 2018. Accessed December 20, 2018. https://www.airnav.com/airports/get.

ALUC (Airport Land Use Commission). 2004. *Airport Environs Land Use Plan for Fullerton Municipal Airport*. Amended November 18, 2004. Accessed November 13, 2018. http://www.ocair.com/commissions/aluc/docs/FMA_AELUP-November-18-2004.pdf.

BNSF (BNSF Railway). 2011. Utility Accommodation Policy. May 18, 2011.

CalEPA (California Environmental Protection Agency). 2018. "Cortese List: Section 65962.5(a)." Accessed November 13, 2018. https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/.

CAL FIRE (California Department of Forestry and Fire Protection). 2011. "Orange County Very High Fire Hazard Severity Zones in LRA." October 2011. https://cms.ocgov.com/civicax/filebank/blobdload.aspx?BlobID=8755.

California Public Resources Code, Section 21000–21177. California Environmental Quality Act, as amended.

Caltrans (California Department of Transportation). 2011. "California Scenic Highway Mapping System." Access November 12, 2018. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

Caltrans. 2013a. *Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol*. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. September 2013.

Caltrans. 2013b. *Transportation and Construction Vibration Guidance Manual*. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. September 2013. Sacramento, California.

Caltrans. 2017. Encroachment Permit Application Guide. January 2017. Accessed November 2018. http://www.dot.ca.gov/trafficops/ep/docs/EP_Application_Guide_Booklet.pdf.

CAPCOA (California Air Pollution Control Officers Association). 2008. CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. January 2008.

CARB (California Air Resources Board). 2014. *First Update to the Climate Change Scoping Plan Building on the Framework Pursuant to AB 32 – The California Global Warming Solutions Act of 2006*. May 2014. Accessed August 2014. http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf.

CARB. 2017. "California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target." November 2017. Accessed November 2018. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

CDFG (California Department of Fish and Game). 2010. *List of Vegetation Alliances and Associations: Natural Communities List Arranged Alphabetically by Life Form*. September 2010. Accessed November 2018. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/List.

CDFW (California Department of Fish and Wildlife). 2018a. Rarefind 5: Commercial version. Online database. California Natural Diversity Database. CDFG, Biogeographic Data Branch. Accessed November 2018. http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp.

CDFW. 2018b. *State and Federally Listed Endangered and Threatened, and Rare Plants of California*. Biannual publication, mimeo.

CDFW. 2018c. *Special Vascular Plants, Bryophytes, and Lichens List*. Quarterly publication.

CDFW. 2018d. *Special Animals List*. Periodic publication.

CGS (California Geologic Survey). 1981. Generalized Aggregate Resource Classification Map Special Report 143 Plate 3.1. Released 1981. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/SR_143/PartIII/Plate_3-1.pdf.

CGS. 1998a. Earthquake Zones of Required Investigation, Anaheim Quadrangle. Released April 15, 1998. http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/ANAHEIM_EZRIM.pdf.

CGS. 1998b. Earthquake Zones of Required Investigation, Orange Quadrangle. Released April 15, 1998. http://gmw.conservation.ca.gov/SHP/EZRIM/Maps/ORANGE_EZRIM.pdf.

City of Fullerton. 2012. The Fullerton Plan. Adopted May 1, 2012. https://www.cityoffullerton.com/civicax/filebank/blobdload.aspx?BlobID=22683.

City of Placentia. 1975. City of Placentia Municipal Code Chapter 23,76, Noise Control.

City of Placentia. 1998. City of Placentia Zoning Map. Revised May 1998

City of Placentia. 2003. City of Placentia General Plan Circulation Element, November 2003. Accessed on January 23, 2019. http://www.placentia.org/613/General-Plan-Documents.

City of Placentia. 2017a. *Transit Oriented Development Packing House District Development Standards*. October 2017. Accessed October 2018. http://www.placentia.org/documentcenter/view/5803.

City of Placentia. 2017b. *Placentia Municipal Code*. Placentia, California. Accessed January 2019. https://qcode.us/codes/placentia/

City of Placentia. 2018a. *Sanitary Sewer Master Plan and Condition Assessment*. February 2018.

City of Placentia. 2018b. Placentia Municipal Code. As amended September 11, 2018. Accessed October 29, 2018. https://qcode.us/codes/placentia.

City of Placentia. 2018c. "Existing General Plan Land Use Map." Accessed October 29, 2018. http://www.placentia.org/DocumentCenter/View/6289.

CNPS (California Native Plant Society). 2018. *Inventory of Rare and Endangered Plants* (online edition, v8-02). Sacramento, California: California Native Plant Society. Accessed November 2018. http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi.

CNRA (California Natural Resources Agency). 2009. "Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97." Sacramento, California: CNRA. December 2009. http://resources.ca.gov/ceqa/docs/Final_Statement_ of_Reasons.pdf.

County of Orange. 1992. *Habitat Classification System: Natural Resources Geographic Information System (GIS) Project*. Prepared by J. Gray (Dames & Moore) and D. Bramlet (Consulting Biologist) for T.B. Mathews (County of Orange). Santa Ana, California: County of Orange Environmental Management Agency, Planning Department. May 1992.

County of Orange. 2012. Orange County General Plan, Chapter VI -13 Orange County Mineral Resources (Figure VI-3). Amended 2012. https://www.ocgov.com/civicax/filebank/blobdload.aspx?blobid=8625.

DOC (Department of Conservation). 2004. "Agricultural Preserves 2004: Williamson Act Parcels, Orange County, California" [map]. Accessed November 12, 2018. ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Orange_WA_03_04.pdf.

DOC. 2016. "California Important Farmland Finder." Copyright 2016. Accessed November 12, 2018. http://maps.conservation.ca.gov/ciff/ciff.html.

DTSC (Department of Toxic Substances Control). 2018a. "EnviroStor Database." Accessed November 13, 2018. https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=S+Placentia+and+E+Orangethorpe.

DTSC. 2018b. "Winonics, Inc. (71002207)." Accessed November 13, 2018. https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=71002207.

EPA. 2016. "Criteria Air Pollutants" Last updated June 28, 2017. https://www.epa.gov/criteria-air-pollutants

FEMA (Federal Emergency Management Agency). 2009a. "Flood Insurance Rate Map Panel 132 of 539, Orange County, California." December 3, 2009.

FEMA. 2009b. "Flood Insurance Rate Map Panel 151 of 539, Orange County, California." December 3, 2009.

FHWA (Federal Highway Administration). 2008. *Roadway Construction Noise Model (RCNM), Software Version 1.1*. U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division. Washington, D.C.

FTA (U.S. Department of Transportation Federal Transit Administration, Office of Planning and Environment). 2006. FTA-VA-90-1003-06. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA.

IPCC (Intergovernmental Panel on Climate Change). 2007. *IPCC Fourth Assessment Synthesis of Scientific-Technical Information Relevant to Interpreting Article 2 of the U.N. Framework Convention on Climate Change*.

Morton, D.M. and Miller, F. K. 2006. Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangles, California, U.S. Geological Survey Open-File Report 2006-1217, scale 1:100,000.

OCTA (Orange County Transportation Authority). 2017. *Congestion Management Program, October 2017*. Accessed January 23, 2019. http://www.octa.net/pdf/2017%20Final%20CMP.pdf.

OEHHA (Office of Environmental Health Hazard Assessment). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments. https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

RWQCB (Regional Water Quality Control Board). 2004. Order No. R8-2004-0062. Issued 2004. https://www.ocsd.com/Home/ShowDocument?id=11698.

Sawyer, J., T. Keeler-Wolf, and J. Evens. 2009. *A Manual of California Vegetation*. 2nd ed. Sacramento, California: California Native Plant Society.

SCAG (Southern California Association of Governments). 2016. *2016–2040 Regional Transportation Plan/ Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability, and High Quality of Life.* Adopted April 2016. Accessed January 2019. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

SCAQMD (South Coast Air Quality Management District). 1993. CEQA Air Quality Handbook.

SCAQMD. 2003. White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. August 2003. http://www.aqmd.gov/docs/default-source/Agendas/ Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper.pdf?sfvrsn=2.

SCAQMD (South Coast Air Quality Management District). 2008. "Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Thresholds." October 2008.

SCAQMD. 2009. Final Localized Significance Threshold Methodology. June 2003; revised July 2008; Appendix C "Mass Rate LST Look-up Tables" revised October 2009. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

SCAQMD. 2010. "Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group Meeting #15." September 28, 2010. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2.

SCAQMD. 2015. "SCAQMD Air Quality Significance Thresholds." Originally published in *CEQA Air Quality Handbook*, Table A9-11-A. Revised March 2015. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

SCAQMD. 2017. *Final 2016 Air Quality Management Plan.* March 3, 2017. http://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.

SWRCB (State Water Resources Control Board). 2018. "GeoTracker." Accessed November 13, 2018. https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=S+Placentia+and+E+Orangethorpe.

USDA (U.S. Department of Agriculture). 2018a. Web Soil Survey. USDA, Natural Resources Conservation Service. Accessed November 2018. http://websoilsurvey.nrcs.usda.gov.

USFWS (U.S. Fish and Wildlife Service). 2018a. *Environmental Conservation Online System, Information for Planning and Conservation Report* (online edition). Accessed November 2018. http://ecos.fws.gov/ipac/.

USFWS. 2018b. *National Wetlands Inventory, Wetlands Mapper* (online edition). Accessed November 2018. http://www.fws.gov/wetlands/Data/Mapper.html.

4.2 List of Preparers

City of Placentia

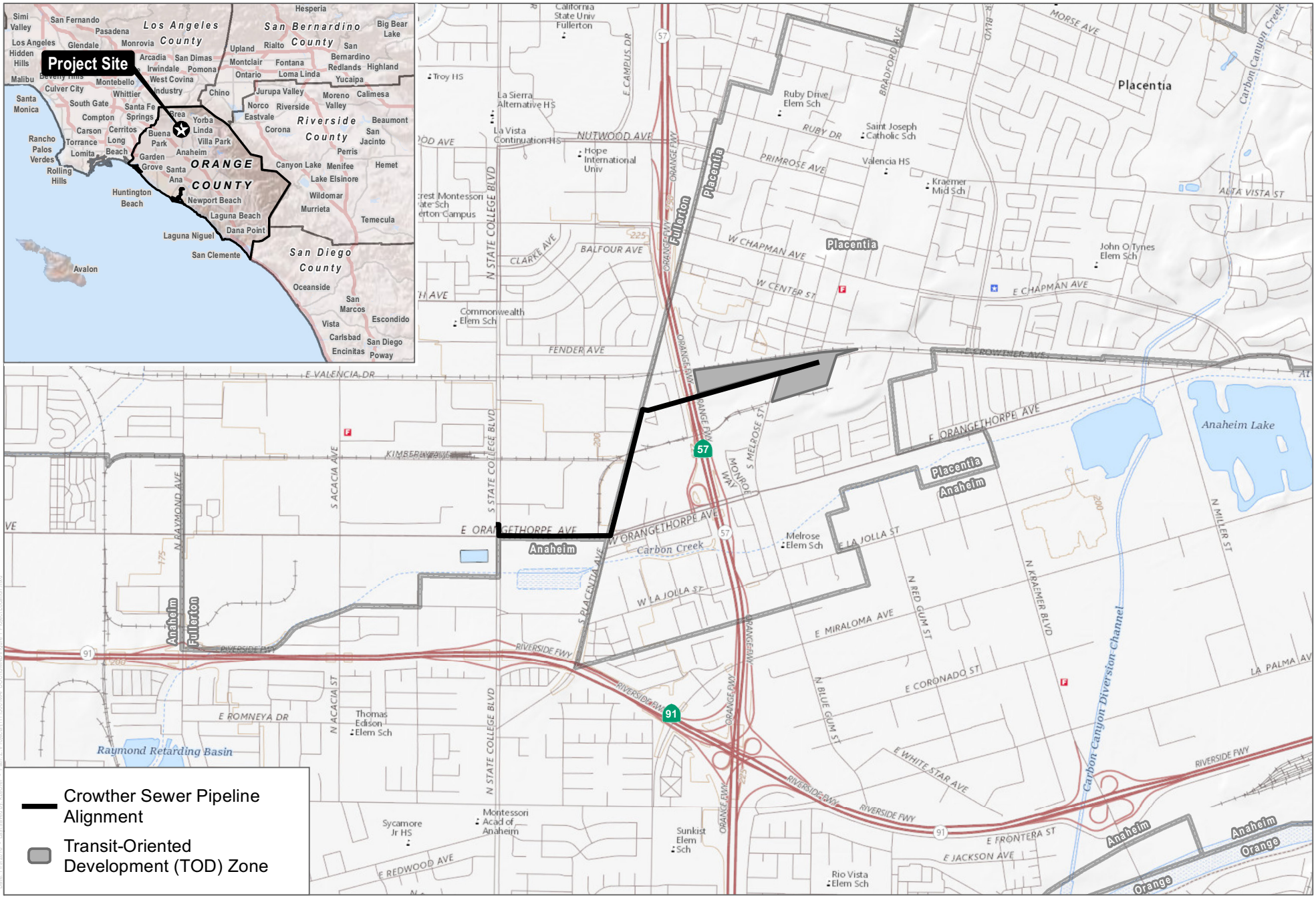
Masoud Sepahi, PE, LEED GA, City Engineer
Joseph Lambert, Planning Director
Andrew Gonzales, Senior Planner

Dudek Environmental

Rachel Struglia, PhD, AICP, Principal and Project Manager
Sabrina Alonso, Environmental Analyst
Samantha Wang, Air Quality and Greenhouse Gas Emissions
Adam Poll, Air Quality and Greenhouse Gas Emissions
Janice Wondolleck, Biological Resources
Erica Nicolay, Cultural Resources
Michael Greene, Noise
Dennis Pascua, Transportation
Amanda Meroux, Transportation
Kirsten Zecher, GIS Technician
Steve Taffolla, Publications Manager
David Mueller, Senior Publications Specialist

Dudek Engineering

Russ Bergholz, Project Manager
Kate Palmer, Lead Engineer
Brian Tran, Project Engineer



SOURCE: USGS

DUDEK

0 1,100 2,200 Feet

FIGURE 1

Project Location

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

INTENTIONALLY LEFT BLANK

SOURCE: Bing Maps

DUDEK

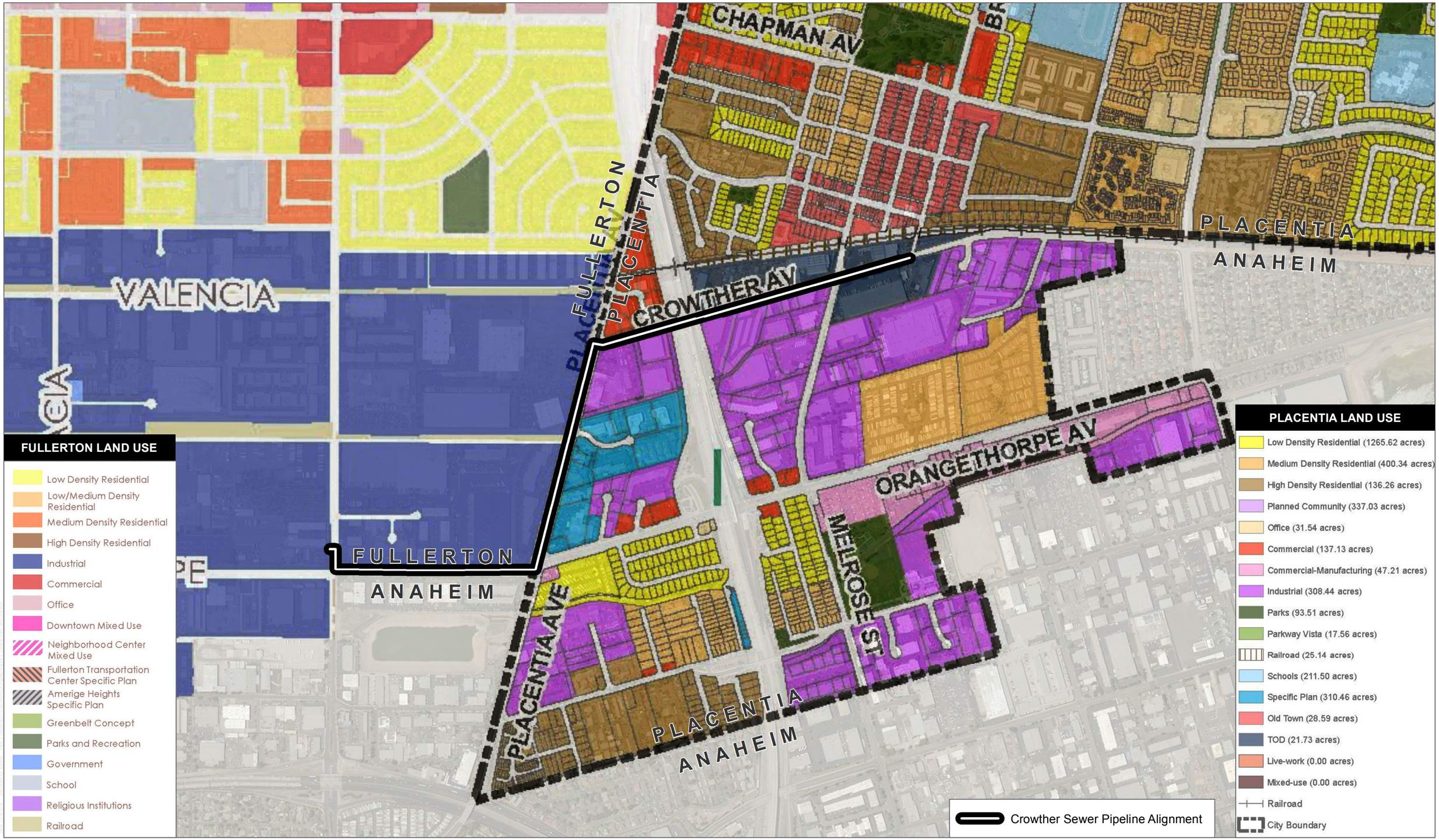
0 200 400 Feet

FIGURE 2

Project Alignment

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

INTENTIONALLY LEFT BLANK



SOURCE: City of Placentia General Plan Land Use, City of Fullerton General Plan Land Use

DUDEK

0 425 850 Feet

FIGURE 3

General Plan Land Use

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

INTENTIONALLY LEFT BLANK

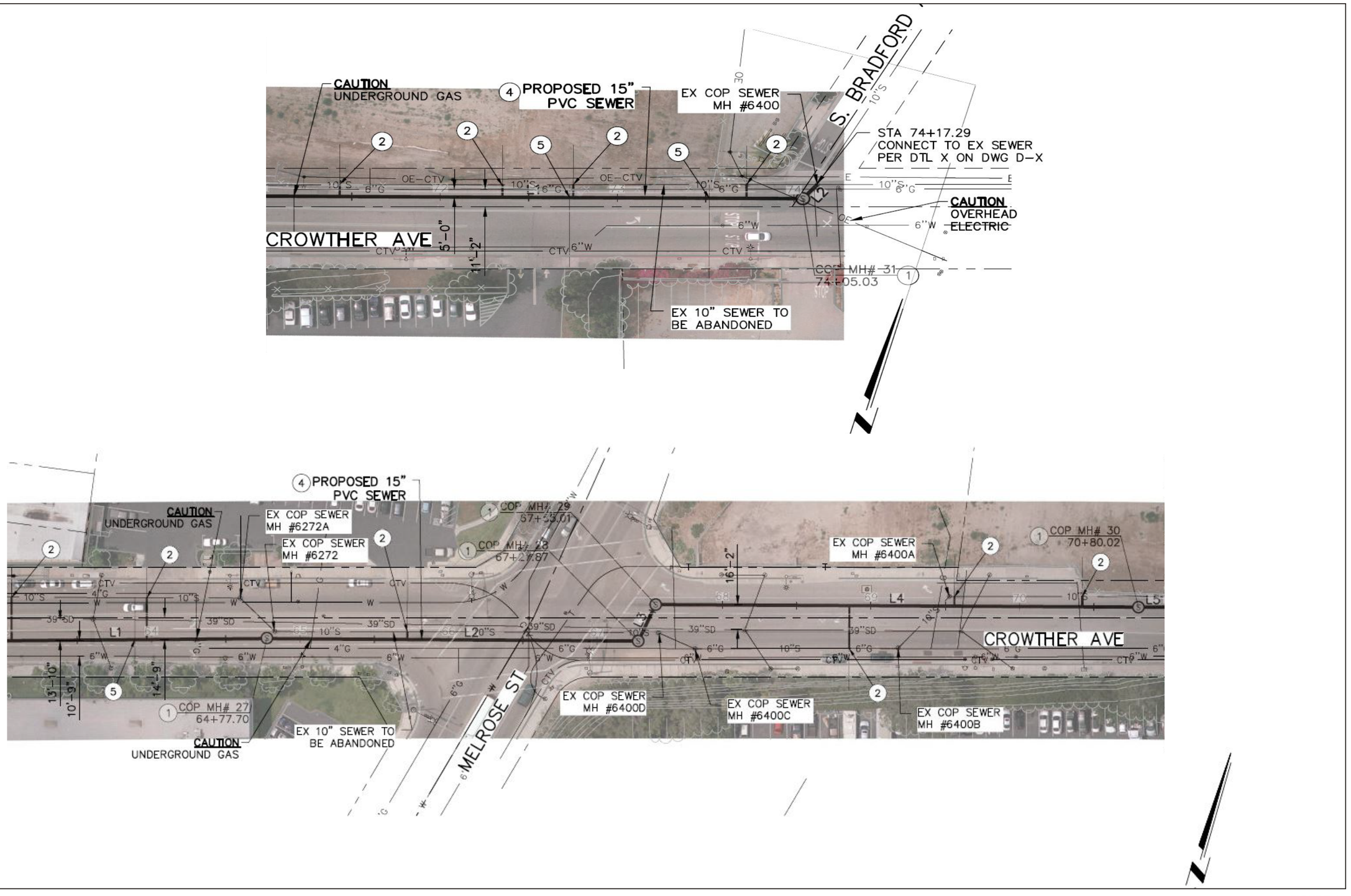


FIGURE 4a
Segment 1

INTENTIONALLY LEFT BLANK

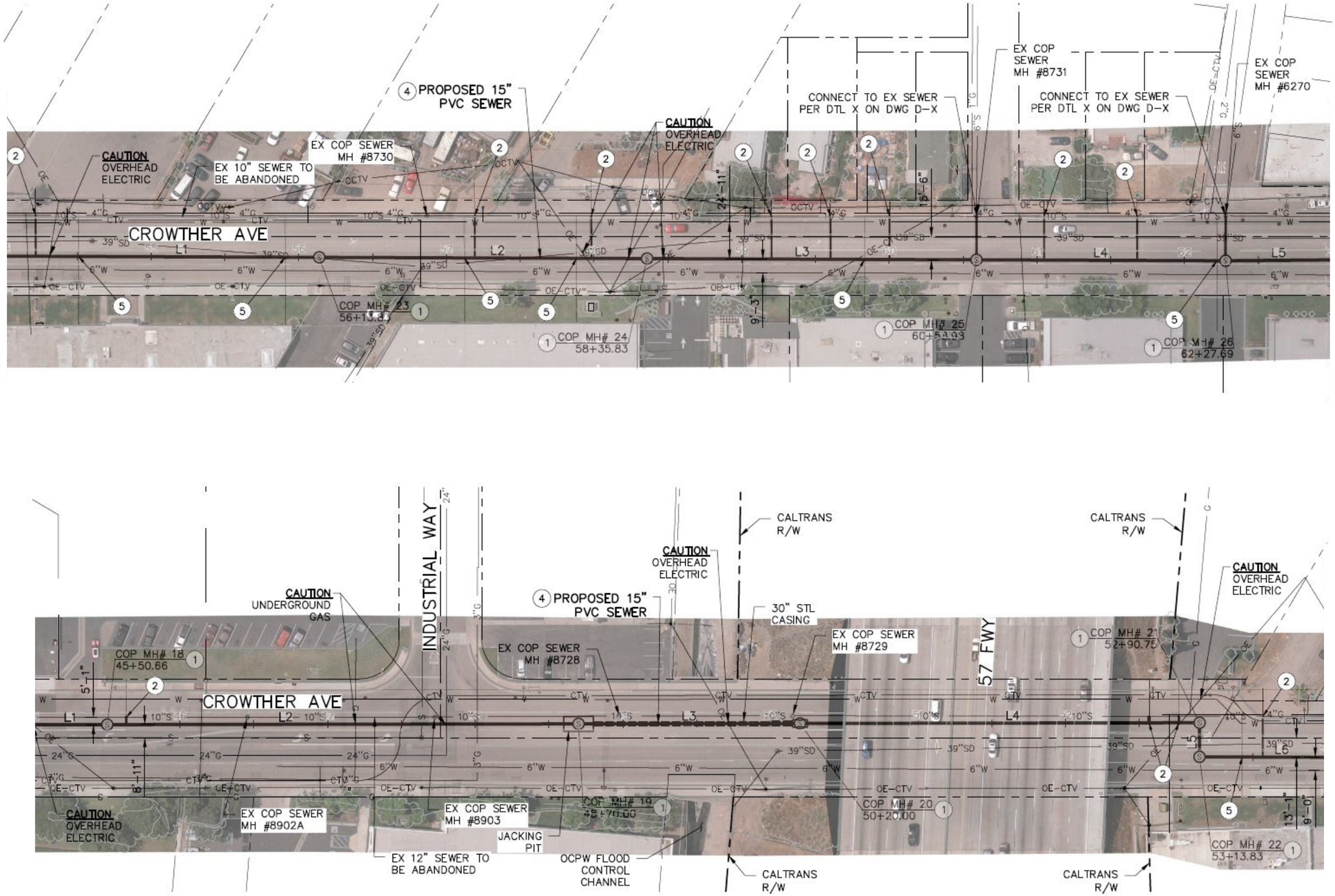


FIGURE 4b
Segment 1

INTENTIONALLY LEFT BLANK

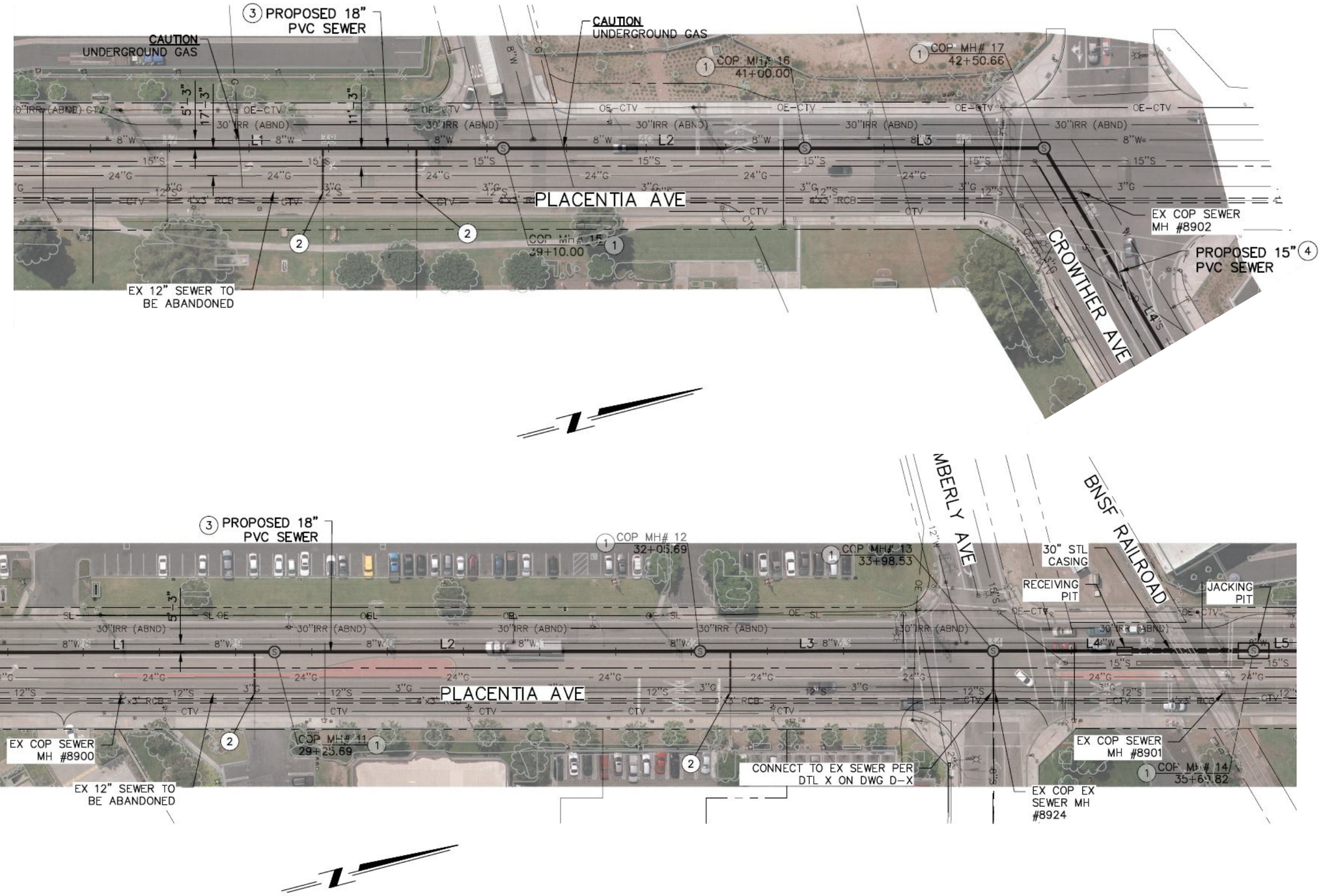
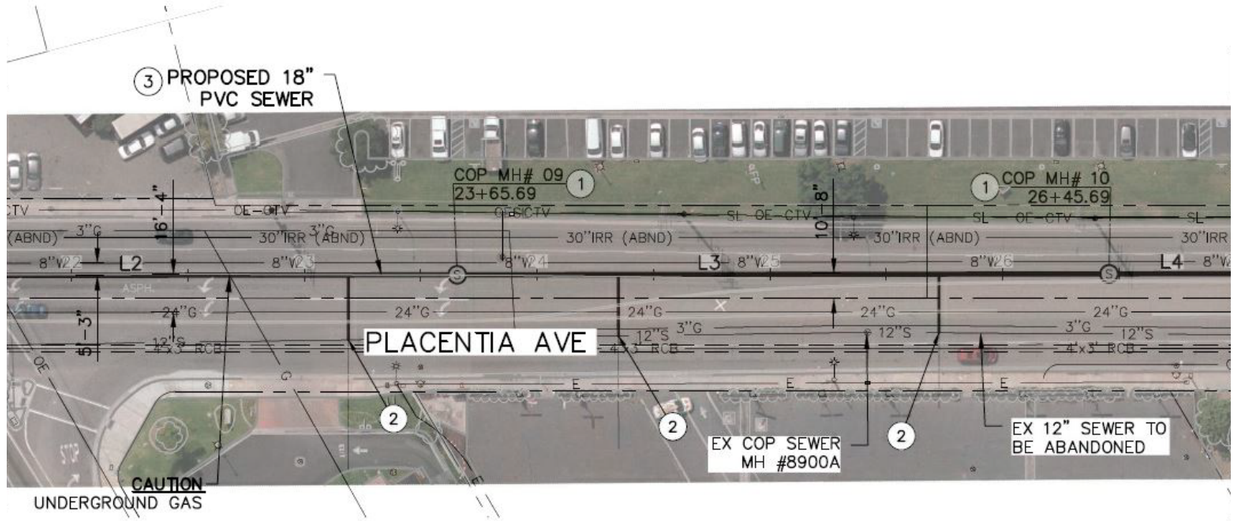


FIGURE 5a
Segment 2

INTENTIONALLY LEFT BLANK



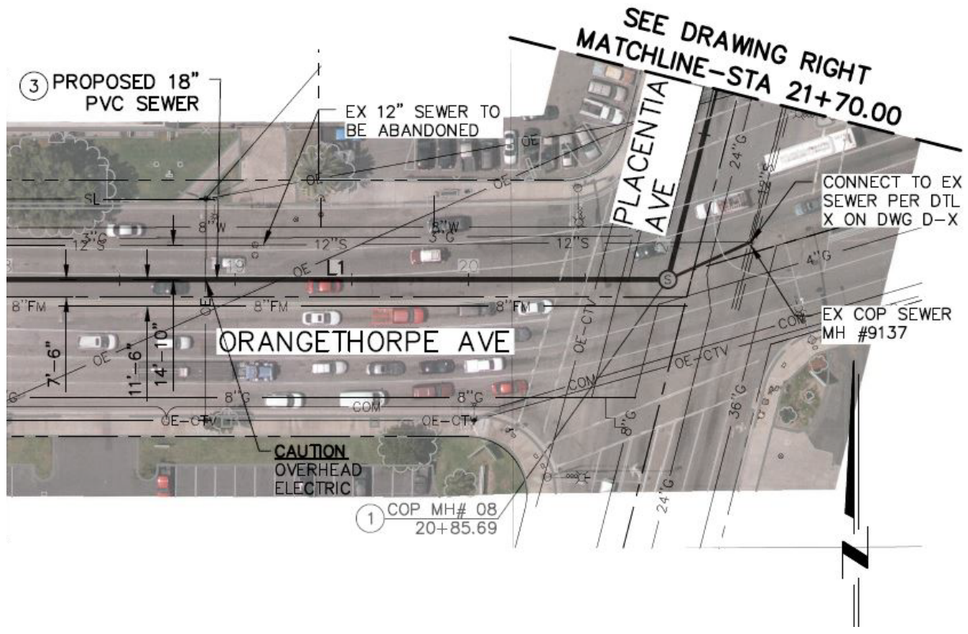


FIGURE 5b
Segment 2

INTENTIONALLY LEFT BLANK

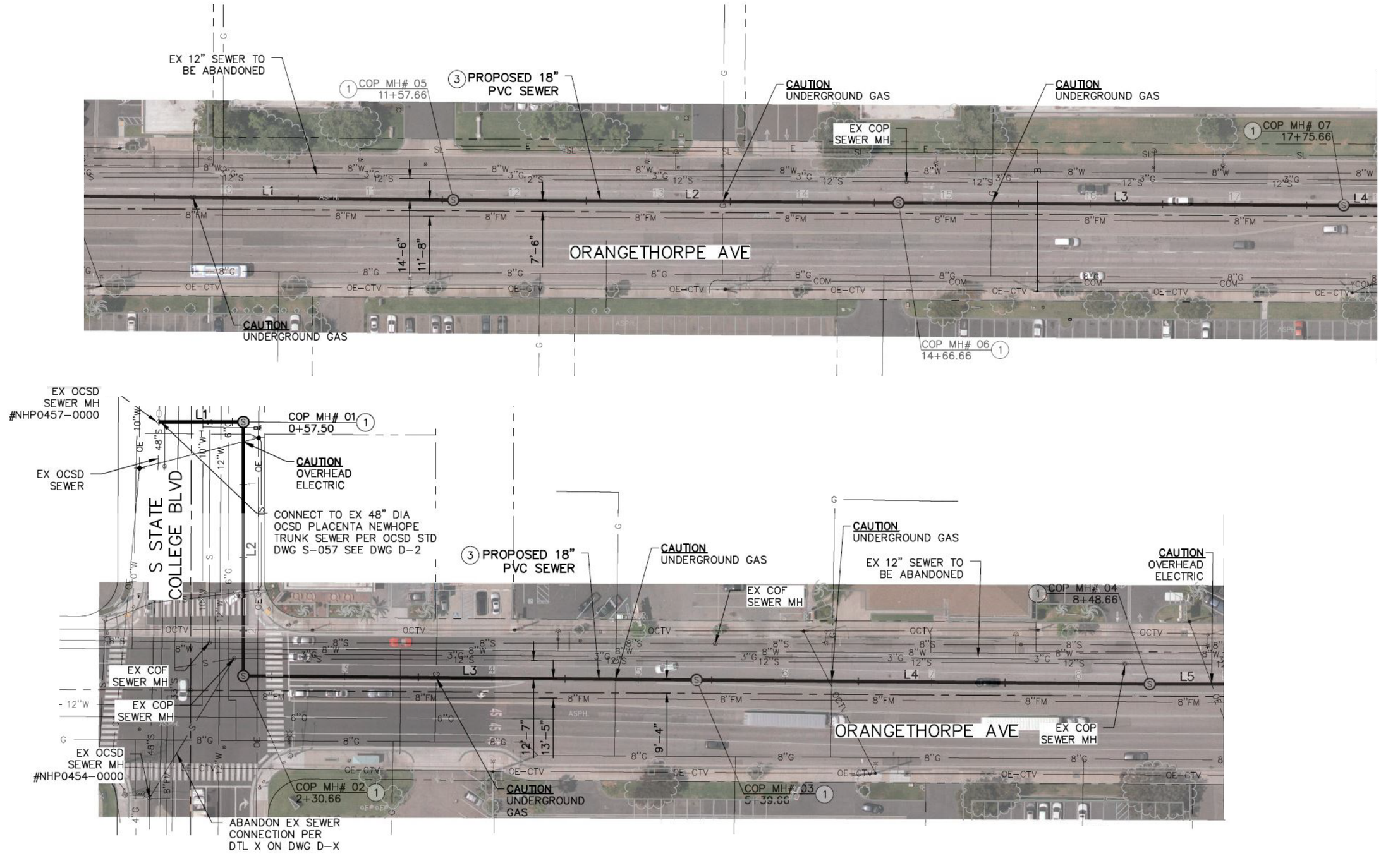
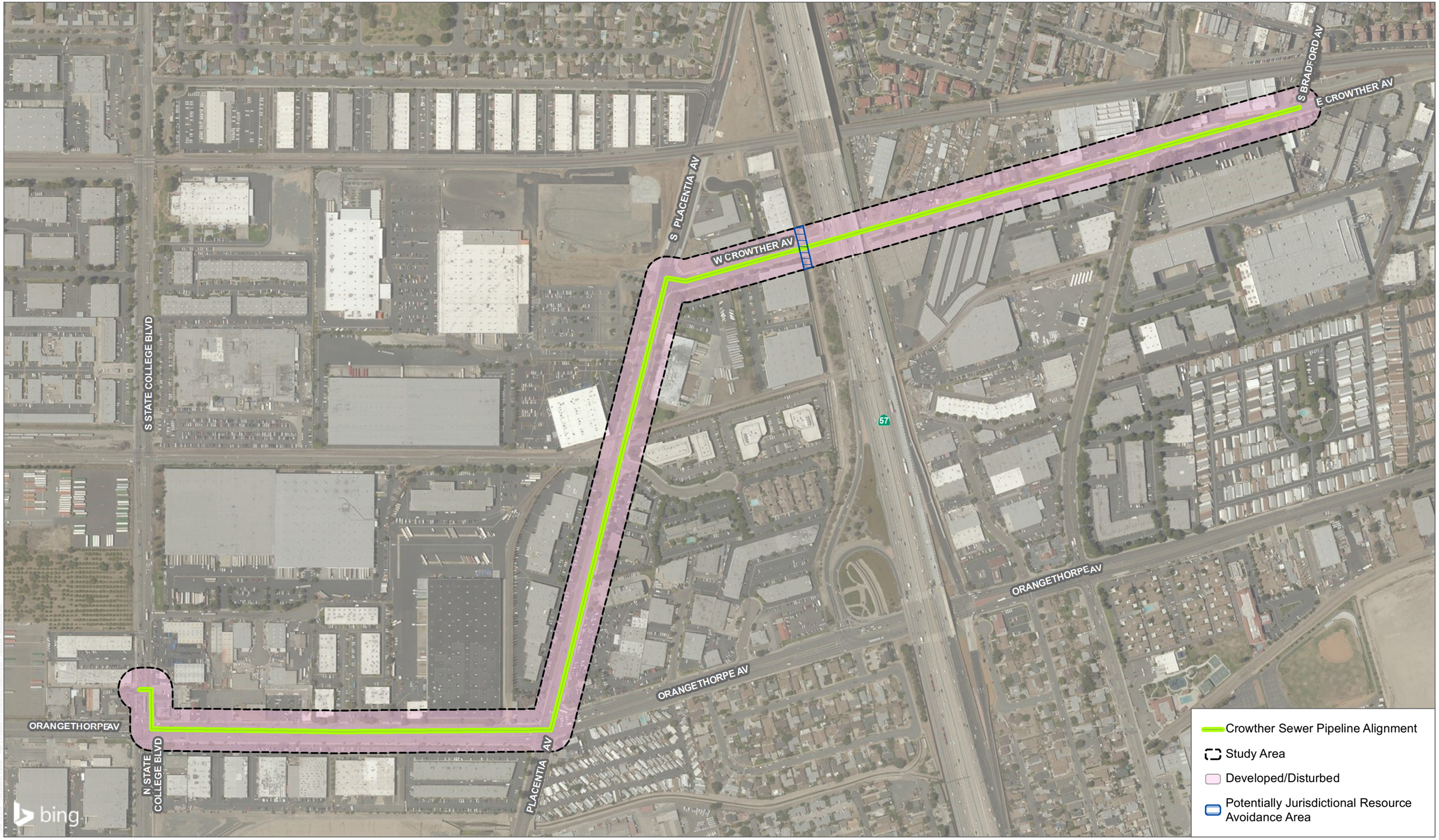


FIGURE 6
Segment 3

INTENTIONALLY LEFT BLANK



SOURCE: Bing Maps

DUDEK

0 210 420 Feet

FIGURE 7

Vegetation Communities and Land Cover

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

INTENTIONALLY LEFT BLANK

SOURCE: Bing Maps

DUDEK

0 210 420 Feet

FIGURE 8

Noise Measurement Locations

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

INTENTIONALLY LEFT BLANK

APPENDIX A

Air Quality and Greenhouse Gas Emissions

Crowther Open Trench Construction

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.60	26,000.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Open Trench Construction - Orange County, Annual

Project Characteristics - Open trench construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Line striping machine

Off-road Equipment - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Trips and VMT - Data provided by applicant. Haul trip based on native fill from the 7400 LF of trenching. Trenching and backfill assume 9000 CY / 16 cy/truck.

Demolition - Data provided by applicant.

Architectural Coating - Architectural coating used for lane striping only.

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rul 403 fugitive dust control

Grading - data from applicant.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	13,000.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	39,000.00	0.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	6.00	152.00
tblConstructionPhase	NumDays	220.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblGrading	AcresOfGrading	76.00	0.60

tblLandUse	LandUseSquareFeet	0.00	26,000.00
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	HorsePower	78.00	6.00
tblOffRoadEquipment	LoadFactor	0.48	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	VendorTripNumber	17.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	3.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	5.00
tblTripsAndVMT	WorkerTripNumber	45.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	4.00

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					
2019	0.1606	1.5011	1.3451	2.6800e-003	0.5070	0.0717	0.5787	0.2634	0.0676	0.3310	0.0000	242.1320	242.1320	0.0472	0.0000	243.3121
Maximum	**0.1606**	**1.5011**	**1.3451**	**2.6800e-003**	**0.5070**	**0.0717**	**0.5787**	**0.2634**	**0.0676**	**0.3310**	**0.0000**	**242.1320**	**242.1320**	**0.0472**	**0.0000**	**243.3121**

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					
2019	0.1606	1.5011	1.3451	2.6800e-003	0.2199	0.0717	0.2915	0.1088	0.0676	0.1763	0.0000	242.1318	242.1318	0.0472	0.0000	243.3119
Maximum	**0.1606**	**1.5011**	**1.3451**	**2.6800e-003**	**0.2199**	**0.0717**	**0.2915**	**0.1088**	**0.0676**	**0.1763**	**0.0000**	**242.1318**	**242.1318**	**0.0472**	**0.0000**	**243.3119**

	ROG	NOx	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**	**56.64**	**0.00**	**49.62**	**58.72**	**0.00**	**46.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2019	8-31-2019	0.7165	0.7165
2	9-1-2019	9-30-2019	0.2336	0.2336
		Highest	0.7165	0.7165

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1213	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1213**	**8.9000e-004**	**0.0961**	**1.0000e-005**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1213	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1213**	**8.9000e-004**	**0.0961**	**1.0000e-005**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Trenching	Trenching	6/1/2019	12/31/2019	5	152	
4	Pipeline Installation	Building Construction	6/1/2019	12/31/2019	5	152	
5	Paving	Paving	6/1/2019	12/31/2019	5	152	
6	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Trenching	Excavators	1	8.00	158	0.38
Backfill and Grading	Excavators	1	8.00	158	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Installation	Forklifts	1	8.00	89	0.20
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	6	0.75

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	3.00	0.00	118.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	6	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Pipeline Installation	7	5.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

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					0.0128	0.0000	0.0128	1.9400e-003	0.0000	1.9400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.2727	0.2814	4.8000e-004		0.0174	0.0174		0.0174	0.0174	0.0000	40.8620	40.8620	2.8800e-003	0.0000	40.9339
Total	**0.0351**	**0.2727**	**0.2814**	**4.8000e-004**	**0.0128**	**0.0174**	**0.0302**	**1.9400e-003**	**0.0174**	**0.0194**	**0.0000**	**40.8620**	**40.8620**	**2.8800e-003**	**0.0000**	**40.9339**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-004	0.0181	4.3000e-003	5.0000e-005	1.0100e-003	7.0000e-005	1.0800e-003	2.8000e-004	6.0000e-005	3.4000e-004	0.0000	4.5881	4.5881	4.9000e-004	0.0000	4.6003
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.9000e-004	7.7100e-003	2.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2381	2.2381	6.0000e-005	0.0000	2.2395
Total	**1.4500e-003**	**0.0188**	**0.0120**	**7.0000e-005**	**3.5100e-003**	**9.0000e-005**	**3.6000e-003**	**9.4000e-004**	**8.0000e-005**	**1.0200e-003**	**0.0000**	**6.8262**	**6.8262**	**5.5000e-004**	**0.0000**	**6.8398**

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					4.9900e-003	0.0000	4.9900e-003	7.6000e-004	0.0000	7.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.2727	0.2814	4.8000e-004		0.0174	0.0174		0.0174	0.0174	0.0000	40.8619	40.8619	2.8800e-003	0.0000	40.9338
Total	**0.0351**	**0.2727**	**0.2814**	**4.8000e-004**	**4.9900e-003**	**0.0174**	**0.0224**	**7.6000e-004**	**0.0174**	**0.0182**	**0.0000**	**40.8619**	**40.8619**	**2.8800e-003**	**0.0000**	**40.9338**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.0000e-004	0.0181	4.3000e-003	5.0000e-005	1.0100e-003	7.0000e-005	1.0800e-003	2.8000e-004	6.0000e-005	3.4000e-004	0.0000	4.5881	4.5881	4.9000e-004	0.0000	4.6003
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.9000e-004	7.7100e-003	2.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2381	2.2381	6.0000e-005	0.0000	2.2395
Total	**1.4500e-003**	**0.0188**	**0.0120**	**7.0000e-005**	**3.5100e-003**	**9.0000e-005**	**3.6000e-003**	**9.4000e-004**	**8.0000e-005**	**1.0200e-003**	**0.0000**	**6.8262**	**6.8262**	**5.5000e-004**	**0.0000**	**6.8398**

3.3 Backfill and Grading - 2019

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					0.4580	0.0000	0.4580	0.2516	0.0000	0.2516	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2229	0.2640	4.3000e-004		0.0106	0.0106		9.7900e-003	9.7900e-003	0.0000	37.6173	37.6173	0.0114	0.0000	37.9022
Total	**0.0229**	**0.2229**	**0.2640**	**4.3000e-004**	**0.4580**	**0.0106**	**0.4686**	**0.2516**	**9.7900e-003**	**0.2614**	**0.0000**	**37.6173**	**37.6173**	**0.0114**	**0.0000**	**37.9022**

3.3 Backfill and Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3200e-003	0.0619	0.0114	8.0000e-005	7.3000e-004	9.0000e-005	8.3000e-004	2.0000e-004	9.0000e-005	2.9000e-004	0.0000	7.7908	7.7908	1.2600e-003	0.0000	7.8222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**2.9100e-003**	**0.0630**	**0.0243**	**1.2000e-004**	**4.9000e-003**	**1.2000e-004**	**5.0300e-003**	**1.3100e-003**	**1.2000e-004**	**1.4200e-003**	**0.0000**	**11.5209**	**11.5209**	**1.3500e-003**	**0.0000**	**11.5546**

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					0.1786	0.0000	0.1786	0.0981	0.0000	0.0981	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2229	0.2640	4.3000e-004		0.0106	0.0106		9.7900e-003	9.7900e-003	0.0000	37.6173	37.6173	0.0114	0.0000	37.9022
Total	**0.0229**	**0.2229**	**0.2640**	**4.3000e-004**	**0.1786**	**0.0106**	**0.1892**	**0.0981**	**9.7900e-003**	**0.1079**	**0.0000**	**37.6173**	**37.6173**	**0.0114**	**0.0000**	**37.9022**

3.3 Backfill and Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3200e-003	0.0619	0.0114	8.0000e-005	7.3000e-004	9.0000e-005	8.3000e-004	2.0000e-004	9.0000e-005	2.9000e-004	0.0000	7.7908	7.7908	1.2600e-003	0.0000	7.8222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**2.9100e-003**	**0.0630**	**0.0243**	**1.2000e-004**	**4.9000e-003**	**1.2000e-004**	**5.0300e-003**	**1.3100e-003**	**1.2000e-004**	**1.4200e-003**	**0.0000**	**11.5209**	**11.5209**	**1.3500e-003**	**0.0000**	**11.5546**

3.4 Trenching - 2019

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	0.0198	0.2038	0.2480	3.9000e-004		9.8300e-003	9.8300e-003		9.0400e-003	9.0400e-003	0.0000	35.2401	35.2401	0.0112	0.0000	35.5188
Total	**0.0198**	**0.2038**	**0.2480**	**3.9000e-004**		**9.8300e-003**	**9.8300e-003**		**9.0400e-003**	**9.0400e-003**	**0.0000**	**35.2401**	**35.2401**	**0.0112**	**0.0000**	**35.5188**

3.4 Trenching - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3200e-003	0.0619	0.0114	8.0000e-005	7.3000e-004	9.0000e-005	8.3000e-004	2.0000e-004	9.0000e-005	2.9000e-004	0.0000	7.7908	7.7908	1.2600e-003	0.0000	7.8222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**2.9100e-003**	**0.0630**	**0.0243**	**1.2000e-004**	**4.9000e-003**	**1.2000e-004**	**5.0300e-003**	**1.3100e-003**	**1.2000e-004**	**1.4200e-003**	**0.0000**	**11.5209**	**11.5209**	**1.3500e-003**	**0.0000**	**11.5546**

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	0.0198	0.2038	0.2480	3.9000e-004		9.8300e-003	9.8300e-003		9.0400e-003	9.0400e-003	0.0000	35.2400	35.2400	0.0112	0.0000	35.5188
Total	**0.0198**	**0.2038**	**0.2480**	**3.9000e-004**		**9.8300e-003**	**9.8300e-003**		**9.0400e-003**	**9.0400e-003**	**0.0000**	**35.2400**	**35.2400**	**0.0112**	**0.0000**	**35.5188**

3.4 Trenching - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3200e-003	0.0619	0.0114	8.0000e-005	7.3000e-004	9.0000e-005	8.3000e-004	2.0000e-004	9.0000e-005	2.9000e-004	0.0000	7.7908	7.7908	1.2600e-003	0.0000	7.8222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**2.9100e-003**	**0.0630**	**0.0243**	**1.2000e-004**	**4.9000e-003**	**1.2000e-004**	**5.0300e-003**	**1.3100e-003**	**1.2000e-004**	**1.4200e-003**	**0.0000**	**11.5209**	**11.5209**	**1.3500e-003**	**0.0000**	**11.5546**

3.5 Pipeline Installation - 2019

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	0.0122	0.1086	0.0908	1.2000e-004		8.4100e-003	8.4100e-003		7.7400e-003	7.7400e-003	0.0000	10.4329	10.4329	3.3000e-003	0.0000	10.5155
Total	**0.0122**	**0.1086**	**0.0908**	**1.2000e-004**		**8.4100e-003**	**8.4100e-003**		**7.7400e-003**	**7.7400e-003**	**0.0000**	**10.4329**	**10.4329**	**3.3000e-003**	**0.0000**	**10.5155**

3.5 Pipeline Installation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8100e-003	0.1759	0.0479	3.8000e-004	9.5700e-003	1.1700e-003	0.0107	2.7600e-003	1.1200e-003	3.8800e-003	0.0000	37.2572	37.2572	3.2500e-003	0.0000	37.3385
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**7.4000e-003**	**0.1771**	**0.0607**	**4.2000e-004**	**0.0137**	**1.2000e-003**	**0.0149**	**3.8700e-003**	**1.1500e-003**	**5.0100e-003**	**0.0000**	**40.9874**	**40.9874**	**3.3400e-003**	**0.0000**	**41.0710**

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	0.0122	0.1086	0.0908	1.2000e-004		8.4100e-003	8.4100e-003		7.7400e-003	7.7400e-003	0.0000	10.4329	10.4329	3.3000e-003	0.0000	10.5155
Total	**0.0122**	**0.1086**	**0.0908**	**1.2000e-004**		**8.4100e-003**	**8.4100e-003**		**7.7400e-003**	**7.7400e-003**	**0.0000**	**10.4329**	**10.4329**	**3.3000e-003**	**0.0000**	**10.5155**

3.5 Pipeline Installation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8100e-003	0.1759	0.0479	3.8000e-004	9.5700e-003	1.1700e-003	0.0107	2.7600e-003	1.1200e-003	3.8800e-003	0.0000	37.2572	37.2572	3.2500e-003	0.0000	37.3385
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**7.4000e-003**	**0.1771**	**0.0607**	**4.2000e-004**	**0.0137**	**1.2000e-003**	**0.0149**	**3.8700e-003**	**1.1500e-003**	**5.0100e-003**	**0.0000**	**40.9874**	**40.9874**	**3.3400e-003**	**0.0000**	**41.0710**

3.6 Paving - 2019

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	0.0344	0.3406	0.2899	4.0000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	35.8083	35.8083	0.0113	0.0000	36.0916
Paving	2.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0368**	**0.3406**	**0.2899**	**4.0000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**35.8083**	**35.8083**	**0.0113**	**0.0000**	**36.0916**

3.6 Paving - 2019

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	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.2200e-003**	**1.6200e-003**	**0.0180**	**6.0000e-005**	**5.8400e-003**	**4.0000e-005**	**5.8800e-003**	**1.5500e-003**	**4.0000e-005**	**1.5900e-003**	**0.0000**	**5.2222**	**5.2222**	**1.3000e-004**	**0.0000**	**5.2254**

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	0.0344	0.3406	0.2899	4.0000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	35.8083	35.8083	0.0113	0.0000	36.0915
Paving	2.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0368**	**0.3406**	**0.2899**	**4.0000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**35.8083**	**35.8083**	**0.0113**	**0.0000**	**36.0915**

3.6 Paving - 2019

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	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.2200e-003**	**1.6200e-003**	**0.0180**	**6.0000e-005**	**5.8400e-003**	**4.0000e-005**	**5.8800e-003**	**1.5500e-003**	**4.0000e-005**	**1.5900e-003**	**0.0000**	**5.2222**	**5.2222**	**1.3000e-004**	**0.0000**	**5.2254**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0111					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5100e-003	0.0280	0.0215	5.0000e-005		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	3.1097	3.1097	3.7000e-004	0.0000	3.1189
Total	**0.0156**	**0.0280**	**0.0215**	**5.0000e-005**		**1.4500e-003**	**1.4500e-003**		**1.4500e-003**	**1.4500e-003**	**0.0000**	**3.1097**	**3.1097**	**3.7000e-004**	**0.0000**	**3.1189**

3.7 Architectural Coating - 2019

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	1.2700e-003	9.3000e-004	0.0103	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9841	2.9841	7.0000e-005	0.0000	2.9860
Total	**1.2700e-003**	**9.3000e-004**	**0.0103**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9841**	**2.9841**	**7.0000e-005**	**0.0000**	**2.9860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0111					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5100e-003	0.0280	0.0215	5.0000e-005		1.4500e-003	1.4500e-003		1.4500e-003	1.4500e-003	0.0000	3.1097	3.1097	3.7000e-004	0.0000	3.1189
Total	**0.0156**	**0.0280**	**0.0215**	**5.0000e-005**		**1.4500e-003**	**1.4500e-003**		**1.4500e-003**	**1.4500e-003**	**0.0000**	**3.1097**	**3.1097**	**3.7000e-004**	**0.0000**	**3.1189**

3.7 Architectural Coating - 2019

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	1.2700e-003	9.3000e-004	0.0103	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9841	2.9841	7.0000e-005	0.0000	2.9860
Total	**1.2700e-003**	**9.3000e-004**	**0.0103**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9841**	**2.9841**	**7.0000e-005**	**0.0000**	**2.9860**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1213	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Unmitigated	0.1213	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981

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	0.0132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0991					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0400e-003	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Total	**0.1213**	**8.9000e-004**	**0.0961**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

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	0.0132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0991					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0400e-003	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Total	**0.1213**	**8.9000e-004**	**0.0961**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

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

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Crowther Open Trench Construction

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.60	26,000.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Open Trench Construction - Orange County, Summer

Project Characteristics - Open trench construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Line striping machine

Off-road Equipment - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Trips and VMT - Data provided by applicant. Haul trip based on native fill from the 7400 LF of trenching. Trenching and backfill assume 9000 CY / 16 cy/truck.

Demolition - Data provided by applicant.

Architectural Coating - Architectural coating used for lane striping only.

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rul 403 fugitive dust control

Grading - data from applicant.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	13,000.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	39,000.00	0.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	6.00	152.00
tblConstructionPhase	NumDays	220.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblGrading	AcresOfGrading	76.00	0.60

tblLandUse	LandUseSquareFeet	0.00	26,000.00
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	HorsePower	78.00	6.00
tblOffRoadEquipment	LoadFactor	0.48	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	VendorTripNumber	17.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	3.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	5.00
tblTripsAndVMT	WorkerTripNumber	45.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	4.00

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					
2019	2.1084	19.6981	17.6895	0.0355	6.6797	0.9429	7.6227	3.4680	0.8888	4.3569	0.0000	3,538.6117	3,538.6117	0.6822	0.0000	3,555.6681
Maximum	**2.1084**	**19.6981**	**17.6895**	**0.0355**	**6.6797**	**0.9429**	**7.6227**	**3.4680**	**0.8888**	**4.3569**	**0.0000**	**3,538.6117**	**3,538.6117**	**0.6822**	**0.0000**	**3,555.6681**

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					
2019	2.1084	19.6981	17.6895	0.0355	2.9010	0.9429	3.8439	1.4329	0.8888	2.3218	0.0000	3,538.6117	3,538.6117	0.6822	0.0000	3,555.6681
Maximum	**2.1084**	**19.6981**	**17.6895**	**0.0355**	**2.9010**	**0.9429**	**3.8439**	**1.4329**	**0.8888**	**2.3218**	**0.0000**	**3,538.6117**	**3,538.6117**	**0.6822**	**0.0000**	**3,555.6681**

	ROG	NOx	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**	**56.57**	**0.00**	**49.57**	**58.68**	**0.00**	**46.71**	**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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Trenching	Trenching	6/1/2019	12/31/2019	5	152	
4	Pipeline Installation	Building Construction	6/1/2019	12/31/2019	5	152	
5	Paving	Paving	6/1/2019	12/31/2019	5	152	
6	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Crowther Open Trench Construction - Orange County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Trenching	Excavators	1	8.00	158	0.38
Backfill and Grading	Excavators	1	8.00	158	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Installation	Forklifts	1	8.00	89	0.20
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	6	0.75

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	3.00	0.00	118.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	6	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Pipeline Installation	7	5.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

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					0.1684	0.0000	0.1684	0.0255	0.0000	0.0255			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294		592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**0.1684**	**0.2294**	**0.3978**	**0.0255**	**0.2294**	**0.2549**		**592.6657**	**592.6657**	**0.0417**		**593.7086**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.4500e-003	0.2301	0.0552	6.0000e-004	0.0135	8.8000e-004	0.0144	3.7000e-003	8.5000e-004	4.5500e-003		66.9629	66.9629	6.9900e-003		67.1376
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0124	8.1100e-003	0.1070	3.4000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		33.7842	33.7842	8.3000e-004		33.8050
Total	**0.0188**	**0.2382**	**0.1622**	**9.4000e-004**	**0.0471**	**1.1000e-003**	**0.0482**	**0.0126**	**1.0600e-003**	**0.0137**		**100.7471**	**100.7471**	**7.8200e-003**		**100.9426**

3.2 Demolition - 2019

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					0.0657	0.0000	0.0657	9.9400e-003	0.0000	9.9400e-003			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294	0.0000	592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**0.0657**	**0.2294**	**0.2951**	**9.9400e-003**	**0.2294**	**0.2394**	**0.0000**	**592.6657**	**592.6657**	**0.0417**		**593.7086**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.4500e-003	0.2301	0.0552	6.0000e-004	0.0135	8.8000e-004	0.0144	3.7000e-003	8.5000e-004	4.5500e-003		66.9629	66.9629	6.9900e-003		67.1376
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0124	8.1100e-003	0.1070	3.4000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		33.7842	33.7842	8.3000e-004		33.8050
Total	**0.0188**	**0.2382**	**0.1622**	**9.4000e-004**	**0.0471**	**1.1000e-003**	**0.0482**	**0.0126**	**1.0600e-003**	**0.0137**		**100.7471**	**100.7471**	**7.8200e-003**		**100.9426**

3.3 Backfill and Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0263	0.0000	6.0263	3.3107	0.0000	3.3107			0.0000			0.0000
Off-Road	0.3008	2.9332	3.4737	5.6500e-003		0.1391	0.1391		0.1288	0.1288		545.6050	545.6050	0.1653		549.7373
Total	**0.3008**	**2.9332**	**3.4737**	**5.6500e-003**	**6.0263**	**0.1391**	**6.1654**	**3.3107**	**0.1288**	**3.4394**		**545.6050**	**545.6050**	**0.1653**		**549.7373**

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	0.0167	0.8188	0.1346	1.0500e-003	9.8100e-003	1.1300e-003	0.0109	2.7000e-003	1.0800e-003	3.7800e-003		116.9712	116.9712	0.0175		117.4075
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0373**	**0.8323**	**0.3130**	**1.6100e-003**	**0.0657**	**1.5000e-003**	**0.0672**	**0.0175**	**1.4200e-003**	**0.0190**		**173.2782**	**173.2782**	**0.0188**		**173.7492**

3.3 Backfill and Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3503	0.0000	2.3503	1.2912	0.0000	1.2912			0.0000			0.0000
Off-Road	0.3008	2.9332	3.4737	5.6500e-003		0.1391	0.1391		0.1288	0.1288	0.0000	545.6050	545.6050	0.1653		549.7373
Total	**0.3008**	**2.9332**	**3.4737**	**5.6500e-003**	**2.3503**	**0.1391**	**2.4894**	**1.2912**	**0.1288**	**1.4199**	**0.0000**	**545.6050**	**545.6050**	**0.1653**		**549.7373**

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	0.0167	0.8188	0.1346	1.0500e-003	9.8100e-003	1.1300e-003	0.0109	2.7000e-003	1.0800e-003	3.7800e-003		116.9712	116.9712	0.0175		117.4075
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0373**	**0.8323**	**0.3130**	**1.6100e-003**	**0.0657**	**1.5000e-003**	**0.0672**	**0.0175**	**1.4200e-003**	**0.0190**		**173.2782**	**173.2782**	**0.0188**		**173.7492**

3.4 Trenching - 2019

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	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**		**511.1256**	**511.1256**	**0.1617**		**515.1684**

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	0.0167	0.8188	0.1346	1.0500e-003	9.8100e-003	1.1300e-003	0.0109	2.7000e-003	1.0800e-003	3.7800e-003		116.9712	116.9712	0.0175		117.4075
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0373**	**0.8323**	**0.3130**	**1.6100e-003**	**0.0657**	**1.5000e-003**	**0.0672**	**0.0175**	**1.4200e-003**	**0.0190**		**173.2782**	**173.2782**	**0.0188**		**173.7492**

3.4 Trenching - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**	**0.0000**	**511.1256**	**511.1256**	**0.1617**		**515.1684**

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	0.0167	0.8188	0.1346	1.0500e-003	9.8100e-003	1.1300e-003	0.0109	2.7000e-003	1.0800e-003	3.7800e-003		116.9712	116.9712	0.0175		117.4075
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0373**	**0.8323**	**0.3130**	**1.6100e-003**	**0.0657**	**1.5000e-003**	**0.0672**	**0.0175**	**1.4200e-003**	**0.0190**		**173.2782**	**173.2782**	**0.0188**		**173.7492**

3.5 Pipeline Installation - 2019

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	0.1600	1.4283	1.1942	1.5300e-003		0.1107	0.1107		0.1018	0.1018		151.3204	151.3204	0.0479		152.5173
Total	**0.1600**	**1.4283**	**1.1942**	**1.5300e-003**		**0.1107**	**0.1107**		**0.1018**	**0.1018**		**151.3204**	**151.3204**	**0.0479**		**152.5173**

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	0.0750	2.2696	0.6000	5.0200e-003	0.1278	0.0153	0.1431	0.0368	0.0147	0.0514		545.9377	545.9377	0.0461		547.0899
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0956**	**2.2831**	**0.7783**	**5.5800e-003**	**0.1837**	**0.0157**	**0.1994**	**0.0516**	**0.0150**	**0.0666**		**602.2447**	**602.2447**	**0.0475**		**603.4316**

3.5 Pipeline Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1600	1.4283	1.1942	1.5300e-003		0.1107	0.1107		0.1018	0.1018	0.0000	151.3204	151.3204	0.0479		152.5173
Total	**0.1600**	**1.4283**	**1.1942**	**1.5300e-003**		**0.1107**	**0.1107**		**0.1018**	**0.1018**	**0.0000**	**151.3204**	**151.3204**	**0.0479**		**152.5173**

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	0.0750	2.2696	0.6000	5.0200e-003	0.1278	0.0153	0.1431	0.0368	0.0147	0.0514		545.9377	545.9377	0.0461		547.0899
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0956**	**2.2831**	**0.7783**	**5.5800e-003**	**0.1837**	**0.0157**	**0.1994**	**0.0516**	**0.0150**	**0.0666**		**602.2447**	**602.2447**	**0.0475**		**603.4316**

3.6 Paving - 2019

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	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711		519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**		**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0289**	**0.0189**	**0.2497**	**7.9000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**78.8298**	**78.8298**	**1.9400e-003**		**78.8783**

3.6 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711	0.0000	519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**	**0.0000**	**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0289**	**0.0189**	**0.2497**	**7.9000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**78.8298**	**78.8298**	**1.9400e-003**		**78.8783**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	0.3688	0.2827	6.3000e-004		0.0191	0.0191		0.0191	0.0191		45.1039	45.1039	5.3200e-003		45.2368
Total	**0.2057**	**0.3688**	**0.2827**	**6.3000e-004**		**0.0191**	**0.0191**		**0.0191**	**0.0191**		**45.1039**	**45.1039**	**5.3200e-003**		**45.2368**

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	0.0165	0.0108	0.1427	4.5000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		45.0456	45.0456	1.1100e-003		45.0733
Total	**0.0165**	**0.0108**	**0.1427**	**4.5000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**45.0456**	**45.0456**	**1.1100e-003**		**45.0733**

3.7 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	0.3688	0.2827	6.3000e-004		0.0191	0.0191		0.0191	0.0191	0.0000	45.1039	45.1039	5.3200e-003		45.2368
Total	**0.2057**	**0.3688**	**0.2827**	**6.3000e-004**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**45.1039**	**45.1039**	**5.3200e-003**		**45.2368**

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	0.0165	0.0108	0.1427	4.5000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		45.0456	45.0456	1.1100e-003		45.0733
Total	**0.0165**	**0.0108**	**0.1427**	**4.5000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**45.0456**	**45.0456**	**1.1100e-003**		**45.0733**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Unmitigated	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468

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	0.0721					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

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	0.0721					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Crowther Open Trench Construction

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.60	26,000.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Open Trench Construction - Orange County, Winter

Project Characteristics - Open trench construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Line striping machine

Off-road Equipment - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Trips and VMT - Data provided by applicant. Haul trip based on native fill from the 7400 LF of trenching. Trenching and backfill assume 9000 CY / 16 cy/truck.

Demolition - Data provided by applicant.

Architectural Coating - Architectural coating used for lane striping only.

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rul 403 fugitive dust control

Grading - data from applicant.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	13,000.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	39,000.00	0.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	6.00	152.00
tblConstructionPhase	NumDays	220.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblGrading	AcresOfGrading	76.00	0.60

tblLandUse	LandUseSquareFeet	0.00	26,000.00
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	HorsePower	78.00	6.00
tblOffRoadEquipment	LoadFactor	0.48	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	PhaseName		Backfill and Grading
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripLength	20.00	1.50
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,125.00
tblTripsAndVMT	VendorTripNumber	17.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	3.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	5.00
tblTripsAndVMT	WorkerTripNumber	45.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	7.00
tblTripsAndVMT	WorkerTripNumber	9.00	4.00

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					
2019	2.1304	19.6645	17.7412	0.0350	6.6797	0.9436	7.6233	3.4680	0.8895	4.3575	0.0000	3,487.9647	3,487.9647	0.6879	0.0000	3,505.1624
Maximum	**2.1304**	**19.6645**	**17.7412**	**0.0350**	**6.6797**	**0.9436**	**7.6233**	**3.4680**	**0.8895**	**4.3575**	**0.0000**	**3,487.9647**	**3,487.9647**	**0.6879**	**0.0000**	**3,505.1624**

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					
2019	2.1304	19.6645	17.7412	0.0350	2.9010	0.9436	3.8446	1.4329	0.8895	2.3224	0.0000	3,487.9647	3,487.9647	0.6879	0.0000	3,505.1624
Maximum	**2.1304**	**19.6645**	**17.7412**	**0.0350**	**2.9010**	**0.9436**	**3.8446**	**1.4329**	**0.8895**	**2.3224**	**0.0000**	**3,487.9647**	**3,487.9647**	**0.6879**	**0.0000**	**3,505.1624**

	ROG	NOx	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**	**56.57**	**0.00**	**49.57**	**58.68**	**0.00**	**46.70**	**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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Trenching	Trenching	6/1/2019	12/31/2019	5	152	
4	Pipeline Installation	Building Construction	6/1/2019	12/31/2019	5	152	
5	Paving	Paving	6/1/2019	12/31/2019	5	152	
6	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Crowther Open Trench Construction - Orange County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Trenching	Excavators	1	8.00	158	0.38
Backfill and Grading	Excavators	1	8.00	158	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Installation	Forklifts	1	8.00	89	0.20
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	6	0.75

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	3.00	0.00	118.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	6	5.00	0.00	1,125.00	14.70	6.90	1.50	LD_Mix	HDT_Mix	HHDT
Pipeline Installation	7	5.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

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					0.1684	0.0000	0.1684	0.0255	0.0000	0.0255			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294		592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**0.1684**	**0.2294**	**0.3978**	**0.0255**	**0.2294**	**0.2549**		**592.6657**	**592.6657**	**0.0417**		**593.7086**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.6200e-003	0.2331	0.0584	5.9000e-004	0.0135	9.0000e-004	0.0144	3.7000e-003	8.6000e-004	4.5600e-003		65.9706	65.9706	7.1700e-003		66.1498
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.9100e-003	0.0991	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		31.9732	31.9732	7.9000e-004		31.9929
Total	**0.0206**	**0.2421**	**0.1575**	**9.1000e-004**	**0.0471**	**1.1200e-003**	**0.0482**	**0.0126**	**1.0700e-003**	**0.0137**		**97.9438**	**97.9438**	**7.9600e-003**		**98.1427**

3.2 Demolition - 2019

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					0.0657	0.0000	0.0657	9.9400e-003	0.0000	9.9400e-003			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294	0.0000	592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**0.0657**	**0.2294**	**0.2951**	**9.9400e-003**	**0.2294**	**0.2394**	**0.0000**	**592.6657**	**592.6657**	**0.0417**		**593.7086**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.6200e-003	0.2331	0.0584	5.9000e-004	0.0135	9.0000e-004	0.0144	3.7000e-003	8.6000e-004	4.5600e-003		65.9706	65.9706	7.1700e-003		66.1498
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.9100e-003	0.0991	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		31.9732	31.9732	7.9000e-004		31.9929
Total	**0.0206**	**0.2421**	**0.1575**	**9.1000e-004**	**0.0471**	**1.1200e-003**	**0.0482**	**0.0126**	**1.0700e-003**	**0.0137**		**97.9438**	**97.9438**	**7.9600e-003**		**98.1427**

3.3 Backfill and Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0263	0.0000	6.0263	3.3107	0.0000	3.3107			0.0000			0.0000
Off-Road	0.3008	2.9332	3.4737	5.6500e-003		0.1391	0.1391		0.1288	0.1288		545.6050	545.6050	0.1653		549.7373
Total	**0.3008**	**2.9332**	**3.4737**	**5.6500e-003**	**6.0263**	**0.1391**	**6.1654**	**3.3107**	**0.1288**	**3.4394**		**545.6050**	**545.6050**	**0.1653**		**549.7373**

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	0.0183	0.7954	0.1679	9.7000e-004	9.8100e-003	1.3100e-003	0.0111	2.7000e-003	1.2600e-003	3.9500e-003		107.5107	107.5107	0.0192		107.9903
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0416**	**0.8102**	**0.3330**	**1.5000e-003**	**0.0657**	**1.6800e-003**	**0.0674**	**0.0175**	**1.6000e-003**	**0.0191**		**160.7994**	**160.7994**	**0.0205**		**161.3118**

3.3 Backfill and Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3503	0.0000	2.3503	1.2912	0.0000	1.2912			0.0000			0.0000
Off-Road	0.3008	2.9332	3.4737	5.6500e-003		0.1391	0.1391		0.1288	0.1288	0.0000	545.6050	545.6050	0.1653		549.7373
Total	**0.3008**	**2.9332**	**3.4737**	**5.6500e-003**	**2.3503**	**0.1391**	**2.4894**	**1.2912**	**0.1288**	**1.4199**	**0.0000**	**545.6050**	**545.6050**	**0.1653**		**549.7373**

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	0.0183	0.7954	0.1679	9.7000e-004	9.8100e-003	1.3100e-003	0.0111	2.7000e-003	1.2600e-003	3.9500e-003		107.5107	107.5107	0.0192		107.9903
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0416**	**0.8102**	**0.3330**	**1.5000e-003**	**0.0657**	**1.6800e-003**	**0.0674**	**0.0175**	**1.6000e-003**	**0.0191**		**160.7994**	**160.7994**	**0.0205**		**161.3118**

3.4 Trenching - 2019

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	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**		**511.1256**	**511.1256**	**0.1617**		**515.1684**

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	0.0183	0.7954	0.1679	9.7000e-004	9.8100e-003	1.3100e-003	0.0111	2.7000e-003	1.2600e-003	3.9500e-003		107.5107	107.5107	0.0192		107.9903
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0416**	**0.8102**	**0.3330**	**1.5000e-003**	**0.0657**	**1.6800e-003**	**0.0674**	**0.0175**	**1.6000e-003**	**0.0191**		**160.7994**	**160.7994**	**0.0205**		**161.3118**

3.4 Trenching - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**	**0.0000**	**511.1256**	**511.1256**	**0.1617**		**515.1684**

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	0.0183	0.7954	0.1679	9.7000e-004	9.8100e-003	1.3100e-003	0.0111	2.7000e-003	1.2600e-003	3.9500e-003		107.5107	107.5107	0.0192		107.9903
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0416**	**0.8102**	**0.3330**	**1.5000e-003**	**0.0657**	**1.6800e-003**	**0.0674**	**0.0175**	**1.6000e-003**	**0.0191**		**160.7994**	**160.7994**	**0.0205**		**161.3118**

3.5 Pipeline Installation - 2019

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	0.1600	1.4283	1.1942	1.5300e-003		0.1107	0.1107		0.1018	0.1018		151.3204	151.3204	0.0479		152.5173
Total	**0.1600**	**1.4283**	**1.1942**	**1.5300e-003**		**0.1107**	**0.1107**		**0.1018**	**0.1018**		**151.3204**	**151.3204**	**0.0479**		**152.5173**

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	0.0782	2.2720	0.6587	4.9100e-003	0.1278	0.0156	0.1434	0.0368	0.0149	0.0517		532.7103	532.7103	0.0485		533.9232
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.1014**	**2.2868**	**0.8239**	**5.4400e-003**	**0.1837**	**0.0160**	**0.1997**	**0.0516**	**0.0153**	**0.0669**		**585.9990**	**585.9990**	**0.0498**		**587.2447**

3.5 Pipeline Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1600	1.4283	1.1942	1.5300e-003		0.1107	0.1107		0.1018	0.1018	0.0000	151.3204	151.3204	0.0479		152.5173
Total	**0.1600**	**1.4283**	**1.1942**	**1.5300e-003**		**0.1107**	**0.1107**		**0.1018**	**0.1018**	**0.0000**	**151.3204**	**151.3204**	**0.0479**		**152.5173**

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	0.0782	2.2720	0.6587	4.9100e-003	0.1278	0.0156	0.1434	0.0368	0.0149	0.0517		532.7103	532.7103	0.0485		533.9232
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.1014**	**2.2868**	**0.8239**	**5.4400e-003**	**0.1837**	**0.0160**	**0.1997**	**0.0516**	**0.0153**	**0.0669**		**585.9990**	**585.9990**	**0.0498**		**587.2447**

3.6 Paving - 2019

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	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711		519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**		**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0326**	**0.0208**	**0.2312**	**7.5000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**74.6042**	**74.6042**	**1.8400e-003**		**74.6501**

3.6 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711	0.0000	519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**	**0.0000**	**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0326**	**0.0208**	**0.2312**	**7.5000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**74.6042**	**74.6042**	**1.8400e-003**		**74.6501**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	0.3688	0.2827	6.3000e-004		0.0191	0.0191		0.0191	0.0191		45.1039	45.1039	5.3200e-003		45.2368
Total	**0.2057**	**0.3688**	**0.2827**	**6.3000e-004**		**0.0191**	**0.0191**		**0.0191**	**0.0191**		**45.1039**	**45.1039**	**5.3200e-003**		**45.2368**

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	0.0186	0.0119	0.1321	4.3000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		42.6310	42.6310	1.0500e-003		42.6572
Total	**0.0186**	**0.0119**	**0.1321**	**4.3000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**42.6310**	**42.6310**	**1.0500e-003**		**42.6572**

3.7 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	0.3688	0.2827	6.3000e-004		0.0191	0.0191		0.0191	0.0191	0.0000	45.1039	45.1039	5.3200e-003		45.2368
Total	**0.2057**	**0.3688**	**0.2827**	**6.3000e-004**		**0.0191**	**0.0191**		**0.0191**	**0.0191**	**0.0000**	**45.1039**	**45.1039**	**5.3200e-003**		**45.2368**

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	0.0186	0.0119	0.1321	4.3000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		42.6310	42.6310	1.0500e-003		42.6572
Total	**0.0186**	**0.0119**	**0.1321**	**4.3000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**42.6310**	**42.6310**	**1.0500e-003**		**42.6572**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Unmitigated	0.6876	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468

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	0.0721					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

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	0.0721					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.6876**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Crowther Trenchless Construction

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.01	500.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Trenchless Construction - Orange County, Annual

Project Characteristics - Trenchless tunneling construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Jack and bore machine, 173 hp.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Demolition -

Trips and VMT - Data provided by applicant. Trenching 200 cy / 16 cy/truck = 13 trucks

Architectural Coating - Asphalt striping.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 fugitive dust control

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	750.00	0.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	200.00	152.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	4.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	PhaseEndDate	5/11/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	4/13/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	6/28/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	7/8/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	4/27/2020	12/31/2019

Crowther Trenchless Construction - Orange County, Annual

tblConstructionPhase	PhaseStartDate	4/28/2020	6/1/2019
tblConstructionPhase	PhaseStartDate	7/9/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	7/3/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	4/14/2020	6/1/2019
tblLandUse	LandUseSquareFeet	0.00	500.00
tblLandUse	LotAcreage	0.00	0.01
tblOffRoadEquipment	HorsePower	89.00	174.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	1.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	PhaseName		Trenching
tblTripsAndVMT	VendorTripNumber	13.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	34.00	7.00
tblTripsAndVMT	WorkerTripNumber	3.00	7.00
tblTripsAndVMT	WorkerTripNumber	7.00	4.00

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					
2019	0.1813	1.4404	1.5110	2.5400e-003	0.0274	0.0835	0.1109	7.2900e-003	0.0793	0.0866	0.0000	224.9511	224.9511	0.0466	0.0000	226.1154
Maximum	**0.1813**	**1.4404**	**1.5110**	**2.5400e-003**	**0.0274**	**0.0835**	**0.1109**	**7.2900e-003**	**0.0793**	**0.0866**	**0.0000**	**224.9511**	**224.9511**	**0.0466**	**0.0000**	**226.1154**

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					
2019	0.1813	1.2601	1.5109	2.5400e-003	0.0273	0.0835	0.1108	7.2800e-003	0.0793	0.0866	0.0000	224.9509	224.9509	0.0466	0.0000	226.1152
Maximum	**0.1813**	**1.2601**	**1.5109**	**2.5400e-003**	**0.0273**	**0.0835**	**0.1108**	**7.2800e-003**	**0.0793**	**0.0866**	**0.0000**	**224.9509**	**224.9509**	**0.0466**	**0.0000**	**226.1152**

	ROG	NOx	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**	**12.52**	**0.00**	**0.00**	**0.29**	**0.00**	**0.06**	**0.14**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2019**	**8-31-2019**	0.7005	0.6225
2	**9-1-2019**	**9-30-2019**	0.2284	0.2030
		Highest	0.7005	0.6225

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0174	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**8.9000e-004**	**0.0961**	**1.0000e-005**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0174	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0174**	**8.9000e-004**	**0.0961**	**1.0000e-005**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Pipeline Construction	Building Construction	6/1/2019	12/31/2019	5	152	
4	Paving	Paving	6/1/2019	12/31/2019	5	152	
5	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	
6	Trenching	Trenching	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Trenching	Excavators	1	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Backfill and Grading	Excavators	1	8.00	158	0.38
Paving	Rollers	2	8.00	80	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Construction	Forklifts	1	8.00	174	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	2	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	1	7.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2000e-004	0.0000	1.2000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.2727	0.2814	4.8000e-004		0.0174	0.0174		0.0174	0.0174	0.0000	40.8620	40.8620	2.8800e-003	0.0000	40.9339
Total	**0.0351**	**0.2727**	**0.2814**	**4.8000e-004**	**1.2000e-004**	**0.0174**	**0.0176**	**2.0000e-005**	**0.0174**	**0.0175**	**0.0000**	**40.8620**	**40.8620**	**2.8800e-003**	**0.0000**	**40.9339**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0778	0.0778	1.0000e-005	0.0000	0.0780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.9000e-004	7.7100e-003	2.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2381	2.2381	6.0000e-005	0.0000	2.2395
Total	**9.6000e-004**	**1.0000e-003**	**7.7800e-003**	**2.0000e-005**	**2.5200e-003**	**2.0000e-005**	**2.5400e-003**	**6.6000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.3159**	**2.3159**	**7.0000e-005**	**0.0000**	**2.3174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.2727	0.2814	4.8000e-004		0.0174	0.0174		0.0174	0.0174	0.0000	40.8619	40.8619	2.8800e-003	0.0000	40.9338
Total	**0.0351**	**0.2727**	**0.2814**	**4.8000e-004**	**5.0000e-005**	**0.0174**	**0.0175**	**1.0000e-005**	**0.0174**	**0.0175**	**0.0000**	**40.8619**	**40.8619**	**2.8800e-003**	**0.0000**	**40.9338**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.1000e-004	7.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.0778	0.0778	1.0000e-005	0.0000	0.0780
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.9000e-004	7.7100e-003	2.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2381	2.2381	6.0000e-005	0.0000	2.2395
Total	**9.6000e-004**	**1.0000e-003**	**7.7800e-003**	**2.0000e-005**	**2.5200e-003**	**2.0000e-005**	**2.5400e-003**	**6.6000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.3159**	**2.3159**	**7.0000e-005**	**0.0000**	**2.3174**

3.3 Backfill and Grading - 2019

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	0.0230	0.2239	0.2652	4.3000e-004		0.0106	0.0106		9.8300e-003	9.8300e-003	0.0000	37.7935	37.7935	0.0115	0.0000	38.0798
Total	**0.0230**	**0.2239**	**0.2652**	**4.3000e-004**		**0.0106**	**0.0106**		**9.8300e-003**	**9.8300e-003**	**0.0000**	**37.7935**	**37.7935**	**0.0115**	**0.0000**	**38.0798**

3.3 Backfill and Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9800e-003	9.5000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0109	1.0109	1.1000e-004	0.0000	1.0136
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**1.7000e-003**	**5.1400e-003**	**0.0138**	**5.0000e-005**	**4.3900e-003**	**4.0000e-005**	**4.4400e-003**	**1.1700e-003**	**4.0000e-005**	**1.2100e-003**	**0.0000**	**4.7411**	**4.7411**	**2.0000e-004**	**0.0000**	**4.7461**

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	0.0230	0.2239	0.2652	4.3000e-004		0.0106	0.0106		9.8300e-003	9.8300e-003	0.0000	37.7935	37.7935	0.0115	0.0000	38.0798
Total	**0.0230**	**0.2239**	**0.2652**	**4.3000e-004**		**0.0106**	**0.0106**		**9.8300e-003**	**9.8300e-003**	**0.0000**	**37.7935**	**37.7935**	**0.0115**	**0.0000**	**38.0798**

3.3 Backfill and Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9800e-003	9.5000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0109	1.0109	1.1000e-004	0.0000	1.0136
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**1.7000e-003**	**5.1400e-003**	**0.0138**	**5.0000e-005**	**4.3900e-003**	**4.0000e-005**	**4.4400e-003**	**1.1700e-003**	**4.0000e-005**	**1.2100e-003**	**0.0000**	**4.7411**	**4.7411**	**2.0000e-004**	**0.0000**	**4.7461**

3.4 Pipeline Construction - 2019

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	0.0178	0.1803	0.1534	2.3000e-004		9.8000e-003	9.8000e-003		9.0200e-003	9.0200e-003	0.0000	20.4220	20.4220	6.4600e-003	0.0000	20.5835
Total	**0.0178**	**0.1803**	**0.1534**	**2.3000e-004**		**9.8000e-003**	**9.8000e-003**		**9.0200e-003**	**9.0200e-003**	**0.0000**	**20.4220**	**20.4220**	**6.4600e-003**	**0.0000**	**20.5835**

3.4 Pipeline Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8000e-004	0.0176	4.7900e-003	4.0000e-005	9.6000e-004	1.2000e-004	1.0700e-003	2.8000e-004	1.1000e-004	3.9000e-004	0.0000	3.7257	3.7257	3.3000e-004	0.0000	3.7339
Worker	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.8000e-003**	**0.0192**	**0.0228**	**1.0000e-004**	**6.8000e-003**	**1.6000e-004**	**6.9500e-003**	**1.8300e-003**	**1.5000e-004**	**1.9800e-003**	**0.0000**	**8.9479**	**8.9479**	**4.6000e-004**	**0.0000**	**8.9593**

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	0.0178		0.1534	2.3000e-004		9.8000e-003	9.8000e-003		9.0200e-003	9.0200e-003	0.0000	20.4220	20.4220	6.4600e-003	0.0000	20.5835
Total	**0.0178**		**0.1534**	**2.3000e-004**		**9.8000e-003**	**9.8000e-003**		**9.0200e-003**	**9.0200e-003**	**0.0000**	**20.4220**	**20.4220**	**6.4600e-003**	**0.0000**	**20.5835**

3.4 Pipeline Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8000e-004	0.0176	4.7900e-003	4.0000e-005	9.6000e-004	1.2000e-004	1.0700e-003	2.8000e-004	1.1000e-004	3.9000e-004	0.0000	3.7257	3.7257	3.3000e-004	0.0000	3.7339
Worker	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.8000e-003**	**0.0192**	**0.0228**	**1.0000e-004**	**6.8000e-003**	**1.6000e-004**	**6.9500e-003**	**1.8300e-003**	**1.5000e-004**	**1.9800e-003**	**0.0000**	**8.9479**	**8.9479**	**4.6000e-004**	**0.0000**	**8.9593**

3.5 Paving - 2019

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	0.0344	0.3406	0.2899	4.0000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	35.8083	35.8083	0.0113	0.0000	36.0916
Paving	2.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0368**	**0.3406**	**0.2899**	**4.0000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**35.8083**	**35.8083**	**0.0113**	**0.0000**	**36.0916**

3.5 Paving - 2019

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	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.2200e-003**	**1.6200e-003**	**0.0180**	**6.0000e-005**	**5.8400e-003**	**4.0000e-005**	**5.8800e-003**	**1.5500e-003**	**4.0000e-005**	**1.5900e-003**	**0.0000**	**5.2222**	**5.2222**	**1.3000e-004**	**0.0000**	**5.2254**

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	0.0344	0.3406	0.2899	4.0000e-004		0.0224	0.0224		0.0206	0.0206	0.0000	35.8083	35.8083	0.0113	0.0000	36.0915
Paving	2.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0368**	**0.3406**	**0.2899**	**4.0000e-004**		**0.0224**	**0.0224**		**0.0206**	**0.0206**	**0.0000**	**35.8083**	**35.8083**	**0.0113**	**0.0000**	**36.0915**

3.5 Paving - 2019

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	2.2200e-003	1.6200e-003	0.0180	6.0000e-005	5.8400e-003	4.0000e-005	5.8800e-003	1.5500e-003	4.0000e-005	1.5900e-003	0.0000	5.2222	5.2222	1.3000e-004	0.0000	5.2254
Total	**2.2200e-003**	**1.6200e-003**	**0.0180**	**6.0000e-005**	**5.8400e-003**	**4.0000e-005**	**5.8800e-003**	**1.5500e-003**	**4.0000e-005**	**1.5900e-003**	**0.0000**	**5.2222**	**5.2222**	**1.3000e-004**	**0.0000**	**5.2254**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0111					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.1860	0.1866	3.0000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	25.8730	25.8730	2.1900e-003	0.0000	25.9276
Total	**0.0381**	**0.1860**	**0.1866**	**3.0000e-004**		**0.0131**	**0.0131**		**0.0131**	**0.0131**	**0.0000**	**25.8730**	**25.8730**	**2.1900e-003**	**0.0000**	**25.9276**

3.6 Architectural Coating - 2019

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	1.2700e-003	9.3000e-004	0.0103	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9841	2.9841	7.0000e-005	0.0000	2.9860
Total	**1.2700e-003**	**9.3000e-004**	**0.0103**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9841**	**2.9841**	**7.0000e-005**	**0.0000**	**2.9860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0111					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0270	0.1860	0.1866	3.0000e-004		0.0131	0.0131		0.0131	0.0131	0.0000	25.8729	25.8729	2.1900e-003	0.0000	25.9276
Total	**0.0381**	**0.1860**	**0.1866**	**3.0000e-004**		**0.0131**	**0.0131**		**0.0131**	**0.0131**	**0.0000**	**25.8729**	**25.8729**	**2.1900e-003**	**0.0000**	**25.9276**

3.6 Architectural Coating - 2019

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	1.2700e-003	9.3000e-004	0.0103	3.0000e-005	3.3400e-003	2.0000e-005	3.3600e-003	8.9000e-004	2.0000e-005	9.1000e-004	0.0000	2.9841	2.9841	7.0000e-005	0.0000	2.9860
Total	**1.2700e-003**	**9.3000e-004**	**0.0103**	**3.0000e-005**	**3.3400e-003**	**2.0000e-005**	**3.3600e-003**	**8.9000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.9841**	**2.9841**	**7.0000e-005**	**0.0000**	**2.9860**

3.7 Trenching - 2019

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	0.0198	0.2038	0.2480	3.9000e-004		9.8300e-003	9.8300e-003		9.0400e-003	9.0400e-003	0.0000	35.2401	35.2401	0.0112	0.0000	35.5188
Total	**0.0198**	**0.2038**	**0.2480**	**3.9000e-004**		**9.8300e-003**	**9.8300e-003**		**9.0400e-003**	**9.0400e-003**	**0.0000**	**35.2401**	**35.2401**	**0.0112**	**0.0000**	**35.5188**

3.7 Trenching - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9800e-003	9.5000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0109	1.0109	1.1000e-004	0.0000	1.0136
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**1.7000e-003**	**5.1400e-003**	**0.0138**	**5.0000e-005**	**4.3900e-003**	**4.0000e-005**	**4.4400e-003**	**1.1700e-003**	**4.0000e-005**	**1.2100e-003**	**0.0000**	**4.7411**	**4.7411**	**2.0000e-004**	**0.0000**	**4.7461**

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	0.0198	0.2038	0.2480	3.9000e-004		9.8300e-003	9.8300e-003		9.0400e-003	9.0400e-003	0.0000	35.2400	35.2400	0.0112	0.0000	35.5188
Total	**0.0198**	**0.2038**	**0.2480**	**3.9000e-004**		**9.8300e-003**	**9.8300e-003**		**9.0400e-003**	**9.0400e-003**	**0.0000**	**35.2400**	**35.2400**	**0.0112**	**0.0000**	**35.5188**

3.7 Trenching - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.9800e-003	9.5000e-004	1.0000e-005	2.2000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0109	1.0109	1.1000e-004	0.0000	1.0136
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5900e-003	1.1600e-003	0.0129	4.0000e-005	4.1700e-003	3.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1300e-003	0.0000	3.7302	3.7302	9.0000e-005	0.0000	3.7325
Total	**1.7000e-003**	**5.1400e-003**	**0.0138**	**5.0000e-005**	**4.3900e-003**	**4.0000e-005**	**4.4400e-003**	**1.1700e-003**	**4.0000e-005**	**1.2100e-003**	**0.0000**	**4.7411**	**4.7411**	**2.0000e-004**	**0.0000**	**4.7461**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0174	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Unmitigated	0.0174	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981

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	1.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0400e-003	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Total	**0.0174**	**8.9000e-004**	**0.0961**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

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	1.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0400e-003	8.9000e-004	0.0961	1.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	0.1856	0.1856	5.0000e-004	0.0000	0.1981
Total	**0.0174**	**8.9000e-004**	**0.0961**	**1.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**0.1856**	**0.1856**	**5.0000e-004**	**0.0000**	**0.1981**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

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

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Crowther Trenchless Construction

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.01	500.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Trenchless Construction - Orange County, Summer

Project Characteristics - Trenchless tunneling construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Jack and bore machine, 173 hp.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Demolition -

Trips and VMT - Data provided by applicant. Trenching 200 cy / 16 cy/truck = 13 trucks

Architectural Coating - Asphalt striping.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 fugitive dust control

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	750.00	0.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	200.00	152.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	4.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	PhaseEndDate	5/11/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	4/13/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	6/28/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	7/8/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	4/27/2020	12/31/2019

Crowther Trenchless Construction - Orange County, Summer

tblConstructionPhase	PhaseStartDate	4/28/2020	6/1/2019
tblConstructionPhase	PhaseStartDate	7/9/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	7/3/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	4/14/2020	6/1/2019
tblLandUse	LandUseSquareFeet	0.00	500.00
tblLandUse	LotAcreage	0.00	0.01
tblOffRoadEquipment	HorsePower	89.00	174.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	1.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	PhaseName		Trenching
tblTripsAndVMT	VendorTripNumber	13.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	34.00	7.00
tblTripsAndVMT	WorkerTripNumber	3.00	7.00
tblTripsAndVMT	WorkerTripNumber	7.00	4.00

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					
2019	2.3842	18.9339	19.9345	0.0336	0.3671	1.0981	1.4652	0.0975	1.0432	1.1407	0.0000	3,277.1271	3,277.1271	0.6757	0.0000	3,294.0185
Maximum	**2.3842**	**18.9339**	**19.9345**	**0.0336**	**0.3671**	**1.0981**	**1.4652**	**0.0975**	**1.0432**	**1.1407**	**0.0000**	**3,277.1271**	**3,277.1271**	**0.6757**	**0.0000**	**3,294.0185**

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					
2019	2.3842	16.5620	19.9345	0.0336	0.3661	1.0981	1.4642	0.0974	1.0432	1.1406	0.0000	3,277.1271	3,277.1271	0.6757	0.0000	3,294.0185
Maximum	**2.3842**	**16.5620**	**19.9345**	**0.0336**	**0.3661**	**1.0981**	**1.4642**	**0.0974**	**1.0432**	**1.1406**	**0.0000**	**3,277.1271**	**3,277.1271**	**0.6757**	**0.0000**	**3,294.0185**

Crowther Trenchless Construction - Orange County, Summer

	ROG	NOx	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**	**12.53**	**0.00**	**0.00**	**0.27**	**0.00**	**0.07**	**0.15**	**0.00**	**0.01**	**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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Pipeline Construction	Building Construction	6/1/2019	12/31/2019	5	152	
4	Paving	Paving	6/1/2019	12/31/2019	5	152	
5	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	
6	Trenching	Trenching	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Crowther Trenchless Construction - Orange County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Trenching	Excavators	1	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Backfill and Grading	Excavators	1	8.00	158	0.38
Paving	Rollers	2	8.00	80	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Construction	Forklifts	1	8.00	174	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	2	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	1	7.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

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					1.6200e-003	0.0000	1.6200e-003	2.5000e-004	0.0000	2.5000e-004			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294		592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**1.6200e-003**	**0.2294**	**0.2311**	**2.5000e-004**	**0.2294**	**0.2297**		**592.6657**	**592.6657**	**0.0417**		**593.7086**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1000e-004	3.9000e-003	9.4000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005		1.1350	1.1350	1.2000e-004		1.1379
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0124	8.1100e-003	0.1070	3.4000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		33.7842	33.7842	8.3000e-004		33.8050
Total	**0.0125**	**0.0120**	**0.1080**	**3.5000e-004**	**0.0338**	**2.3000e-004**	**0.0340**	**8.9500e-003**	**2.2000e-004**	**9.1800e-003**		**34.9192**	**34.9192**	**9.5000e-004**		**34.9429**

3.2 Demolition - 2019

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					6.3000e-004	0.0000	6.3000e-004	1.0000e-004	0.0000	1.0000e-004			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294	0.0000	592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**6.3000e-004**	**0.2294**	**0.2301**	**1.0000e-004**	**0.2294**	**0.2295**	**0.0000**	**592.6657**	**592.6657**	**0.0417**		**593.7086**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1000e-004	3.9000e-003	9.4000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005		1.1350	1.1350	1.2000e-004		1.1379
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0124	8.1100e-003	0.1070	3.4000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		33.7842	33.7842	8.3000e-004		33.8050
Total	**0.0125**	**0.0120**	**0.1080**	**3.5000e-004**	**0.0338**	**2.3000e-004**	**0.0340**	**8.9500e-003**	**2.2000e-004**	**9.1800e-003**		**34.9192**	**34.9192**	**9.5000e-004**		**34.9429**

3.3 Backfill and Grading - 2019

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	0.3021	2.9466	3.4900	5.6800e-003		0.1398	0.1398		0.1294	0.1294		548.1606	548.1606	0.1661		552.3132
Total	**0.3021**	**2.9466**	**3.4900**	**5.6800e-003**		**0.1398**	**0.1398**		**0.1294**	**0.1294**		**548.1606**	**548.1606**	**0.1661**		**552.3132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4200e-003	0.0507	0.0122	1.3000e-004	2.9800e-003	1.9000e-004	3.1700e-003	8.2000e-004	1.9000e-004	1.0000e-003		14.7545	14.7545	1.5400e-003		14.7930
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0220**	**0.0642**	**0.1905**	**6.9000e-004**	**0.0589**	**5.6000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**71.0615**	**71.0615**	**2.9200e-003**		**71.1347**

3.3 Backfill and Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3021	2.9466	3.4900	5.6800e-003		0.1398	0.1398		0.1294	0.1294	0.0000	548.1606	548.1606	0.1661		552.3132
Total	**0.3021**	**2.9466**	**3.4900**	**5.6800e-003**		**0.1398**	**0.1398**		**0.1294**	**0.1294**	**0.0000**	**548.1606**	**548.1606**	**0.1661**		**552.3132**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4200e-003	0.0507	0.0122	1.3000e-004	2.9800e-003	1.9000e-004	3.1700e-003	8.2000e-004	1.9000e-004	1.0000e-003		14.7545	14.7545	1.5400e-003		14.7930
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0220**	**0.0642**	**0.1905**	**6.9000e-004**	**0.0589**	**5.6000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**71.0615**	**71.0615**	**2.9200e-003**		**71.1347**

3.4 Pipeline Construction - 2019

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	0.2347	2.3720	2.0183	2.9900e-003		0.1290	0.1290		0.1187	0.1187		296.2024	296.2024	0.0937		298.5453
Total	**0.2347**	**2.3720**	**2.0183**	**2.9900e-003**		**0.1290**	**0.1290**		**0.1187**	**0.1187**		**296.2024**	**296.2024**	**0.0937**		**298.5453**

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	7.5000e-003	0.2270	0.0600	5.0000e-004	0.0128	1.5300e-003	0.0143	3.6800e-003	1.4700e-003	5.1400e-003		54.5938	54.5938	4.6100e-003		54.7090
Worker	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0364**	**0.2459**	**0.3097**	**1.2900e-003**	**0.0910**	**2.0500e-003**	**0.0931**	**0.0244**	**1.9500e-003**	**0.0264**		**133.4236**	**133.4236**	**6.5500e-003**		**133.5873**

3.4 Pipeline Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2347		2.0183	2.9900e-003		0.1290	0.1290		0.1187	0.1187	0.0000	296.2024	296.2024	0.0937		298.5453
Total	**0.2347**		**2.0183**	**2.9900e-003**		**0.1290**	**0.1290**		**0.1187**	**0.1187**	**0.0000**	**296.2024**	**296.2024**	**0.0937**		**298.5453**

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	7.5000e-003	0.2270	0.0600	5.0000e-004	0.0128	1.5300e-003	0.0143	3.6800e-003	1.4700e-003	5.1400e-003		54.5938	54.5938	4.6100e-003		54.7090
Worker	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0364**	**0.2459**	**0.3097**	**1.2900e-003**	**0.0910**	**2.0500e-003**	**0.0931**	**0.0244**	**1.9500e-003**	**0.0264**		**133.4236**	**133.4236**	**6.5500e-003**		**133.5873**

3.5 Paving - 2019

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	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711		519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**		**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0289**	**0.0189**	**0.2497**	**7.9000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**78.8298**	**78.8298**	**1.9400e-003**		**78.8783**

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711	0.0000	519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**	**0.0000**	**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0289	0.0189	0.2497	7.9000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		78.8298	78.8298	1.9400e-003		78.8783
Total	**0.0289**	**0.0189**	**0.2497**	**7.9000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**78.8298**	**78.8298**	**1.9400e-003**		**78.8783**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**0.5016**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

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	0.0165	0.0108	0.1427	4.5000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		45.0456	45.0456	1.1100e-003		45.0733
Total	**0.0165**	**0.0108**	**0.1427**	**4.5000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**45.0456**	**45.0456**	**1.1100e-003**		**45.0733**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**0.5016**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

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	0.0165	0.0108	0.1427	4.5000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		45.0456	45.0456	1.1100e-003		45.0733
Total	**0.0165**	**0.0108**	**0.1427**	**4.5000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**45.0456**	**45.0456**	**1.1100e-003**		**45.0733**

3.7 Trenching - 2019

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	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**		**511.1256**	**511.1256**	**0.1617**		**515.1684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4200e-003	0.0507	0.0122	1.3000e-004	2.9800e-003	1.9000e-004	3.1700e-003	8.2000e-004	1.9000e-004	1.0000e-003		14.7545	14.7545	1.5400e-003		14.7930
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0220**	**0.0642**	**0.1905**	**6.9000e-004**	**0.0589**	**5.6000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**71.0615**	**71.0615**	**2.9200e-003**		**71.1347**

3.7 Trenching - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**	**0.0000**	**511.1256**	**511.1256**	**0.1617**		**515.1684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4200e-003	0.0507	0.0122	1.3000e-004	2.9800e-003	1.9000e-004	3.1700e-003	8.2000e-004	1.9000e-004	1.0000e-003		14.7545	14.7545	1.5400e-003		14.7930
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0206	0.0135	0.1784	5.6000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		56.3070	56.3070	1.3800e-003		56.3416
Total	**0.0220**	**0.0642**	**0.1905**	**6.9000e-004**	**0.0589**	**5.6000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**71.0615**	**71.0615**	**2.9200e-003**		**71.1347**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Unmitigated	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468

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	7.3700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

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	7.3700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Crowther Trenchless Construction

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	7,400.00	User Defined Unit	0.01	500.00	0
Other Asphalt Surfaces	80.00	1000sqft	1.84	80,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2020
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

Crowther Trenchless Construction - Orange County, Winter

Project Characteristics - Trenchless tunneling construction only.

Land Use - Data provided by applicant.

Construction Phase - Data provided by applicant.

Off-road Equipment -

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant. Jack and bore machine, 173 hp.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Off-road Equipment - Data provided by applicant.

Demolition -

Trips and VMT - Data provided by applicant. Trenching 200 cy / 16 cy/truck = 13 trucks

Architectural Coating - Asphalt striping.

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 fugitive dust control

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	750.00	0.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	NumDays	200.00	152.00
tblConstructionPhase	NumDays	20.00	152.00
tblConstructionPhase	NumDays	4.00	152.00
tblConstructionPhase	NumDays	10.00	152.00
tblConstructionPhase	PhaseEndDate	5/11/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	4/13/2020	12/31/2019
tblConstructionPhase	PhaseEndDate	6/28/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	7/8/2019	12/31/2019
tblConstructionPhase	PhaseEndDate	4/27/2020	12/31/2019

Crowther Trenchless Construction - Orange County, Winter

tblConstructionPhase	PhaseStartDate	4/28/2020	6/1/2019
tblConstructionPhase	PhaseStartDate	7/9/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	7/3/2019	6/1/2019
tblConstructionPhase	PhaseStartDate	4/14/2020	6/1/2019
tblLandUse	LandUseSquareFeet	0.00	500.00
tblLandUse	LotAcreage	0.00	0.01
tblOffRoadEquipment	HorsePower	89.00	174.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	PhaseName		Trenching
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	1.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	PhaseName		Trenching
tblTripsAndVMT	VendorTripNumber	13.00	2.00
tblTripsAndVMT	WorkerTripNumber	3.00	5.00
tblTripsAndVMT	WorkerTripNumber	34.00	7.00
tblTripsAndVMT	WorkerTripNumber	3.00	7.00
tblTripsAndVMT	WorkerTripNumber	7.00	4.00

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					
2019	2.4009	18.9439	19.8598	0.0334	0.3671	1.0981	1.4652	0.0975	1.0432	1.1408	0.0000	3,256.6366	3,256.6366	0.6755	0.0000	3,273.5251
Maximum	**2.4009**	**18.9439**	**19.8598**	**0.0334**	**0.3671**	**1.0981**	**1.4652**	**0.0975**	**1.0432**	**1.1408**	**0.0000**	**3,256.6366**	**3,256.6366**	**0.6755**	**0.0000**	**3,273.5251**

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					
2019	2.4009	16.5719	19.8598	0.0334	0.3661	1.0981	1.4643	0.0974	1.0432	1.1406	0.0000	3,256.6366	3,256.6366	0.6755	0.0000	3,273.5251
Maximum	**2.4009**	**16.5719**	**19.8598**	**0.0334**	**0.3661**	**1.0981**	**1.4643**	**0.0974**	**1.0432**	**1.1406**	**0.0000**	**3,256.6366**	**3,256.6366**	**0.6755**	**0.0000**	**3,273.5251**

Crowther Trenchless Construction - Orange County, Winter

	ROG	NOx	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**	**12.52**	**0.00**	**0.00**	**0.27**	**0.00**	**0.07**	**0.15**	**0.00**	**0.01**	**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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**	**0.0000**	**2.7600e-003**	**2.7600e-003**	**0.0000**	**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**	**0.0000**	**1.7468**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2019	12/31/2019	5	152	
2	Backfill and Grading	Grading	6/1/2019	12/31/2019	5	152	
3	Pipeline Construction	Building Construction	6/1/2019	12/31/2019	5	152	
4	Paving	Paving	6/1/2019	12/31/2019	5	152	
5	Architectural Coating	Architectural Coating	6/1/2019	12/31/2019	5	152	
6	Trenching	Trenching	6/1/2019	12/31/2019	5	152	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,800 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	8.00	78	0.48
Trenching	Excavators	1	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Backfill and Grading	Excavators	1	8.00	158	0.38
Paving	Rollers	2	8.00	80	0.38
Backfill and Grading	Plate Compactors	1	8.00	8	0.43
Pipeline Construction	Forklifts	1	8.00	174	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	1	3.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	1	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and Grading	2	5.00	0.00	26.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Construction	1	7.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	7.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

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					1.6200e-003	0.0000	1.6200e-003	2.5000e-004	0.0000	2.5000e-004			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294		592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**1.6200e-003**	**0.2294**	**0.2311**	**2.5000e-004**	**0.2294**	**0.2297**		**592.6657**	**592.6657**	**0.0417**		**593.7086**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1000e-004	3.9500e-003	9.9000e-004	1.0000e-005	2.3000e-004	2.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005		1.1182	1.1182	1.2000e-004		1.1212
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.9100e-003	0.0991	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		31.9732	31.9732	7.9000e-004		31.9929
Total	**0.0141**	**0.0129**	**0.1001**	**3.3000e-004**	**0.0338**	**2.4000e-004**	**0.0340**	**8.9500e-003**	**2.2000e-004**	**9.1800e-003**		**33.0914**	**33.0914**	**9.1000e-004**		**33.1141**

3.2 Demolition - 2019

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					6.3000e-004	0.0000	6.3000e-004	1.0000e-004	0.0000	1.0000e-004			0.0000			0.0000
Off-Road	0.4620	3.5885	3.7022	6.2600e-003		0.2294	0.2294		0.2294	0.2294	0.0000	592.6657	592.6657	0.0417		593.7086
Total	**0.4620**	**3.5885**	**3.7022**	**6.2600e-003**	**6.3000e-004**	**0.2294**	**0.2301**	**1.0000e-004**	**0.2294**	**0.2295**	**0.0000**	**592.6657**	**592.6657**	**0.0417**		**593.7086**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1000e-004	3.9500e-003	9.9000e-004	1.0000e-005	2.3000e-004	2.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	8.0000e-005		1.1182	1.1182	1.2000e-004		1.1212
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0140	8.9100e-003	0.0991	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.1000e-004	9.1000e-003		31.9732	31.9732	7.9000e-004		31.9929
Total	**0.0141**	**0.0129**	**0.1001**	**3.3000e-004**	**0.0338**	**2.4000e-004**	**0.0340**	**8.9500e-003**	**2.2000e-004**	**9.1800e-003**		**33.0914**	**33.0914**	**9.1000e-004**		**33.1141**

3.3 Backfill and Grading - 2019

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	0.3021	2.9466	3.4900	5.6800e-003		0.1398	0.1398		0.1294	0.1294		548.1606	548.1606	0.1661		552.3132
Total	**0.3021**	**2.9466**	**3.4900**	**5.6800e-003**		**0.1398**	**0.1398**		**0.1294**	**0.1294**		**548.1606**	**548.1606**	**0.1661**		**552.3132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4600e-003	0.0514	0.0129	1.3000e-004	2.9800e-003	2.0000e-004	3.1800e-003	8.2000e-004	1.9000e-004	1.0100e-003		14.5359	14.5359	1.5800e-003		14.5754
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0247**	**0.0662**	**0.1780**	**6.6000e-004**	**0.0589**	**5.7000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**67.8246**	**67.8246**	**2.8900e-003**		**67.8969**

3.3 Backfill and Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3021	2.9466	3.4900	5.6800e-003		0.1398	0.1398		0.1294	0.1294	0.0000	548.1606	548.1606	0.1661		552.3132
Total	**0.3021**	**2.9466**	**3.4900**	**5.6800e-003**		**0.1398**	**0.1398**		**0.1294**	**0.1294**	**0.0000**	**548.1606**	**548.1606**	**0.1661**		**552.3132**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4600e-003	0.0514	0.0129	1.3000e-004	2.9800e-003	2.0000e-004	3.1800e-003	8.2000e-004	1.9000e-004	1.0100e-003		14.5359	14.5359	1.5800e-003		14.5754
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0247**	**0.0662**	**0.1780**	**6.6000e-004**	**0.0589**	**5.7000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**67.8246**	**67.8246**	**2.8900e-003**		**67.8969**

3.4 Pipeline Construction - 2019

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	0.2347	2.3720	2.0183	2.9900e-003		0.1290	0.1290		0.1187	0.1187		296.2024	296.2024	0.0937		298.5453
Total	**0.2347**	**2.3720**	**2.0183**	**2.9900e-003**		**0.1290**	**0.1290**		**0.1187**	**0.1187**		**296.2024**	**296.2024**	**0.0937**		**298.5453**

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	7.8200e-003	0.2272	0.0659	4.9000e-004	0.0128	1.5600e-003	0.0143	3.6800e-003	1.4900e-003	5.1700e-003		53.2710	53.2710	4.8500e-003		53.3923
Worker	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0404**	**0.2480**	**0.2971**	**1.2400e-003**	**0.0910**	**2.0800e-003**	**0.0931**	**0.0244**	**1.9700e-003**	**0.0264**		**127.8752**	**127.8752**	**6.6900e-003**		**128.0424**

3.4 Pipeline Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2347		2.0183	2.9900e-003		0.1290	0.1290		0.1187	0.1187	0.0000	296.2024	296.2024	0.0937		298.5453
Total	**0.2347**		**2.0183**	**2.9900e-003**		**0.1290**	**0.1290**		**0.1187**	**0.1187**	**0.0000**	**296.2024**	**296.2024**	**0.0937**		**298.5453**

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	7.8200e-003	0.2272	0.0659	4.9000e-004	0.0128	1.5600e-003	0.0143	3.6800e-003	1.4900e-003	5.1700e-003		53.2710	53.2710	4.8500e-003		53.3923
Worker	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0404**	**0.2480**	**0.2971**	**1.2400e-003**	**0.0910**	**2.0800e-003**	**0.0931**	**0.0244**	**1.9700e-003**	**0.0264**		**127.8752**	**127.8752**	**6.6900e-003**		**128.0424**

3.5 Paving - 2019

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	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711		519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**		**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0326**	**0.0208**	**0.2312**	**7.5000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**74.6042**	**74.6042**	**1.8400e-003**		**74.6501**

3.5 Paving - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4531	4.4818	3.8146	5.2400e-003		0.2947	0.2947		0.2711	0.2711	0.0000	519.3675	519.3675	0.1643		523.4756
Paving	0.0317					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4848**	**4.4818**	**3.8146**	**5.2400e-003**		**0.2947**	**0.2947**		**0.2711**	**0.2711**	**0.0000**	**519.3675**	**519.3675**	**0.1643**		**523.4756**

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	0.0326	0.0208	0.2312	7.5000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0212		74.6042	74.6042	1.8400e-003		74.6501
Total	**0.0326**	**0.0208**	**0.2312**	**7.5000e-004**	**0.0782**	**5.2000e-004**	**0.0788**	**0.0208**	**4.8000e-004**	**0.0212**		**74.6042**	**74.6042**	**1.8400e-003**		**74.6501**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717		375.2641	375.2641	0.0317		376.0565
Total	**0.5016**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**		**375.2641**	**375.2641**	**0.0317**		**376.0565**

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	0.0186	0.0119	0.1321	4.3000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		42.6310	42.6310	1.0500e-003		42.6572
Total	**0.0186**	**0.0119**	**0.1321**	**4.3000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**42.6310**	**42.6310**	**1.0500e-003**		**42.6572**

3.6 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.1464					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3553	2.4472	2.4551	3.9600e-003		0.1717	0.1717		0.1717	0.1717	0.0000	375.2641	375.2641	0.0317		376.0565
Total	**0.5016**	**2.4472**	**2.4551**	**3.9600e-003**		**0.1717**	**0.1717**		**0.1717**	**0.1717**	**0.0000**	**375.2641**	**375.2641**	**0.0317**		**376.0565**

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	0.0186	0.0119	0.1321	4.3000e-004	0.0447	3.0000e-004	0.0450	0.0119	2.8000e-004	0.0121		42.6310	42.6310	1.0500e-003		42.6572
Total	**0.0186**	**0.0119**	**0.1321**	**4.3000e-004**	**0.0447**	**3.0000e-004**	**0.0450**	**0.0119**	**2.8000e-004**	**0.0121**		**42.6310**	**42.6310**	**1.0500e-003**		**42.6572**

3.7 Trenching - 2019

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	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190		511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**		**511.1256**	**511.1256**	**0.1617**		**515.1684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4600e-003	0.0514	0.0129	1.3000e-004	2.9800e-003	2.0000e-004	3.1800e-003	8.2000e-004	1.9000e-004	1.0100e-003		14.5359	14.5359	1.5800e-003		14.5754
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0247**	**0.0662**	**0.1780**	**6.6000e-004**	**0.0589**	**5.7000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**67.8246**	**67.8246**	**2.8900e-003**		**67.8969**

3.7 Trenching - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2607	2.6819	3.2632	5.1600e-003		0.1293	0.1293		0.1190	0.1190	0.0000	511.1256	511.1256	0.1617		515.1684
Total	**0.2607**	**2.6819**	**3.2632**	**5.1600e-003**		**0.1293**	**0.1293**		**0.1190**	**0.1190**	**0.0000**	**511.1256**	**511.1256**	**0.1617**		**515.1684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4600e-003	0.0514	0.0129	1.3000e-004	2.9800e-003	2.0000e-004	3.1800e-003	8.2000e-004	1.9000e-004	1.0100e-003		14.5359	14.5359	1.5800e-003		14.5754
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0233	0.0149	0.1651	5.3000e-004	0.0559	3.7000e-004	0.0563	0.0148	3.4000e-004	0.0152		53.2887	53.2887	1.3100e-003		53.3215
Total	**0.0247**	**0.0662**	**0.1780**	**6.6000e-004**	**0.0589**	**5.7000e-004**	**0.0594**	**0.0156**	**5.3000e-004**	**0.0162**		**67.8246**	**67.8246**	**2.8900e-003**		**67.8969**

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
Other Asphalt Surfaces	0.00	0.00	0.00		
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
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
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
Other Asphalt Surfaces	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002
User Defined Industrial	0.555968	0.043848	0.210359	0.116378	0.016765	0.005795	0.025008	0.016160	0.001677	0.001586	0.004867	0.000586	0.001002

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Unmitigated	0.1179	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468

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	7.3700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

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	7.3700e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0382					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0723	7.1000e-003	0.7686	6.0000e-005		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		1.6370	1.6370	4.3900e-003		1.7468
Total	**0.1179**	**7.1000e-003**	**0.7686**	**6.0000e-005**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**1.6370**	**1.6370**	**4.3900e-003**		**1.7468**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Biological Resources

EUDICOTS

VASCULAR SPECIES

MORACEAE—Mulberry Family
* *Ficus microcarpa*—Chinese banyan

MYRTACEAE—Myrtle Family
* *Eucalyptus* sp.—Eucalyptus
* *Melaleuca viminalis*—weeping bottlebrush

NYCTAGINACEAE—Four O'clock Family
* *Bougainvillea spectabilis*—bougainvillea

OLEACEAE—Olive Family
* *Olea europaea*—olive

PLATANACEAE—Plane Tree, Sycamore Family
Platanus racemosa—California sycamores

RHAMNACEAE—Buckthorn Family
Ceanothus sp.—ceanothus

GYMNOSPERMS AND GNETOPHYTES

VASCULAR SPECIES

GINKGOACEAE—Ginkgo Family
Ginkgo sp.—ginkgo

PINACEAE—Pine Family
Pinus sp.—pine

PODOCARPACEAE—Ornamental and Timber Evergreen Trees Family
* *Afrocarpus falcatus*—African fern pine

MONOCOTS

VASCULAR SPECIES

ARECACEAE—Palm Family
* *Syagrus romanzoffiana*—queen palm
Washingtonia filifera—California fan palm

POACEAE—Grass Family

* *Cynodon dactylon*—Bermudagrass
* *Pennisetum setaceum*—fountain grass

STRELITZIACEAE—Strelitzia Family

* *Strelitzia reginae*—bird of paradise

* Non-native species

BIRD

FINCHES

FRINGILLIDAE—FRINGILLINE & CARDUELINE FINCHES & ALLIES

Haemorhous mexicanus—house finch
Spinus psaltria—lesser goldfinch

FLYCATCHERS

TYRANNIDAE—TYRANT FLYCATCHERS

Sayornis nigricans—black phoebe

OLD WORLD SPARROWS

PASSERIDAE—OLD WORLD SPARROWS

* *Passer domesticus*—house sparrow

MAMMAL

SQUIRRELS

SCIURIDAE—SQUIRRELS

Spermophilus (Otospermophilus) beecheyi—California ground squirrel

REPTILE

LIZARDS

PHRYNOSOMATIDAE—IGUANID LIZARDS

Sceloporus occidentalis—western fence lizard

* Non-native species

INTENTIONALLY LEFT BLANK

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Abronia villosa var. *aurita*	chaparral sand-verbena	None/None/1B.1	Chaparral, Coastal scrub, Desert dunes; sandy/annual herb/(Jan)Mar–Sep/245–5250	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Aphanisma blitoides	aphanisma	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub; sandy or gravelly/annual herb/Feb–June/0–1000	Not expected to occur. No suitable habitat is present on the project site.
Astragalus brauntonii	Braunton's milk-vetch	FE/None/1B.1	Chaparral, Coastal scrub, Valley and foothill grassland; recent burns or disturbed areas, usually sandstone with carbonate layers/perennial herb/Jan–Aug/10–2100	Not expected to occur. No suitable habitat is present on the project site.
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE/SE/1B.1	Coastal dunes, Coastal scrub, Marshes and swamps (edges, coastal salt or brackish)/perennial herb/(June)Aug–Oct/0–115	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Atriplex coulteri	Coulter's saltbush	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland; alkaline or clay/perennial herb/Mar–Oct/5–1510	Not expected to occur. No suitable habitat is present on the project site.
Atriplex pacifica	South Coast saltscale	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas/annual herb/Mar–Oct/0–460	Not expected to occur. No suitable habitat is present on the project site.
Atriplex parishii	Parish's brittlescale	None/None/1B.1	Chenopod scrub, Playas, Vernal pools; alkaline/annual herb/June–Oct/80–6235	Not expected to occur. No suitable habitat is present on the project site.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	None/None/1B.2	Coastal bluff scrub, Coastal scrub; alkaline/annual herb/Apr–Oct/30–655	Not expected to occur. No suitable habitat is present on the project site.
Baccharis malibuensis	Malibu baccharis	None/None/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland/perennial deciduous shrub/Aug/490–1000	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/1B.1	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
			grassland, Vernal pools; often clay/perennial bulbiferous herb/Mar–June/80–3675	
Calochortus weedii var. *intermedius*	intermediate mariposa lily	None/None/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; rocky, calcareous/perennial bulbiferous herb/May–July/340–2805	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Calystegia felix	lucky morning-glory	None/None/1B.1	Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial); Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline/annual rhizomatous herb/Mar–Sep/95–705	Not expected to occur. No suitable habitat is present on the project site.
Centromadia parryi ssp. *australis*	southern tarplant	None/None/1B.1	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools/annual herb/May–Nov/0–1575	Not expected to occur. No suitable habitat is present on the project site.
Centromadia pungens ssp. *laevis*	smooth tarplant	None/None/1B.1	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland; alkaline/annual herb/Apr–Sep/0–2100	Not expected to occur. No suitable habitat is present on the project site.
Chloropyron maritimum ssp. *maritimum*	salt marsh bird's-beak	FE/SE/1B.2	Coastal dunes, Marshes and swamps (coastal salt)/annual herb (hemiparasitic)/May–Oct(Nov)/0–100	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	FC/SE/1B.1	Coastal scrub (sandy), Valley and foothill grassland/annual herb/Apr–July/490–4005	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Chorizanthe polygonoides var. *longispina*	long-spined spineflower	None/None/1B.2	Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; often clay/annual herb/Apr–July/95–5020	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Dodecahema leptoceras	slender-horned spineflower	FE/SE/1B.1	Chaparral, Cismontane woodland, Coastal scrub (alluvial fan); sandy/annual herb/Apr–June/655–2495	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Dudleya multicaulis	many-stemmed dudleya	None/None/1B.2	Chaparral, Coastal scrub, Valley and foothill grassland; often clay/perennial herb/Apr–July/45–2590	Not expected to occur. No suitable habitat is present on the project site.
Dudleya stolonifera	Laguna Beach dudleya	FT/ST/1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland; rocky/perennial stoloniferous herb/May–July/30–855	Not expected to occur. No suitable habitat is present on the project site.
Eriastrum densifolium ssp. *sanctorum*	Santa Ana River woollystar	FE/SE/1B.1	Chaparral, Coastal scrub (alluvial fan); sandy or gravelly/perennial herb/Apr–Sep/295–2000	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Eryngium aristulatum var. *parishii*	San Diego button-celery	FE/SE/1B.1	Coastal scrub, Valley and foothill grassland, Vernal pools; mesic/annual / perennial herb/Apr–June/65–2035	Not expected to occur. No suitable habitat is present on the project site.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	None/None/1A	Marshes and swamps (coastal salt and freshwater)/perennial rhizomatous herb/Aug–Oct/30–5005	Not expected to occur. No suitable habitat is present on the project site.
Hesperocyparis forbesii	Tecate cypress	None/None/1B.1	Closed-cone coniferous forest, Chaparral; clay, gabbroic or metavolcanic/perennial evergreen tree/N.A./260–4920	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Horkelia cuneata var. *puberula*	mesa horkelia	None/None/1B.1	Chaparral (maritime), Cismontane woodland, Coastal scrub; sandy or gravelly/perennial herb/Feb–July(Sep)/225–2655	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/1B.2	Chaparral, Coastal scrub (sandy, often in disturbed areas)/perennial shrub/Apr–Nov/30–445	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	None/None/1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools/annual herb/Feb–June/0–4005	Not expected to occur. No suitable habitat is present on the project site.
Lepechinia cardiophylla	heart-leaved pitcher sage	None/None/1B.2	Closed-cone coniferous forest, Chaparral, Cismontane woodland/perennial shrub/Apr–July/1705–4495	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Monardella australis ssp. *jokerstii*	Jokerst's monardella	None/None/1B.1	Chaparral, Lower montane coniferous forest; Steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes./perennial rhizomatous herb/July–Sep/4425–5740	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Monardella hypoleuca ssp. *intermedia*	intermediate monardella	None/None/1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest (sometimes); Usually understory/perennial rhizomatous herb/Apr–Sep/1310–4100	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Nama stenocarpa	mud nama	None/None/2B.2	Marshes and swamps (lake margins, riverbanks)/annual / perennial herb/Jan–July/15–1640	Not expected to occur. No suitable habitat is present on the project site.
Nasturtium gambelii	Gambel's water cress	FE/ST/1B.1	Marshes and swamps (freshwater or brackish)/perennial rhizomatous herb/Apr–Oct/15–1085	Not expected to occur. No suitable habitat is present on the project site.
Navarretia prostrata	prostrate vernal pool navarretia	None/None/1B.1	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools; Mesic/annual herb/Apr–July/5–3970	Not expected to occur. No suitable habitat is present on the project site.
Nemacaulis denudata var. *denudata*	coast woolly-heads	None/None/1B.2	Coastal dunes/annual herb/Apr–Sep/0–330	Not expected to occur. No suitable habitat is present on the project site.
Nolina cismontana	chaparral nolina	None/None/1B.2	Chaparral, Coastal scrub; sandstone or gabbro/perennial evergreen shrub/(Mar)May–July/455–4185	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Orcuttia californica	California Orcutt grass	FE/SE/1B.1	Vernal pools/annual herb/Apr–Aug/45–2165	Not expected to occur. No suitable habitat is present on the project site.
Penstemon californicus	California beardtongue	None/None/1B.2	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland; sandy/perennial herb/May–June(Aug)/3835–7545	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Pentachaeta aurea ssp. *allenii*	Allen's pentachaeta	None/None/1B.1	Coastal scrub (openings), Valley and foothill grassland/annual herb/Mar–June/245–1705	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.
Phacelia stellaris	Brand's star phacelia	None/None/1B.1	Coastal dunes, Coastal scrub/annual herb/Mar–June/0–1310	Not expected to occur. No suitable habitat is present on the project site.
Pseudognaphaliu m leucocephalum	white rabbit-tobacco	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; sandy, gravelly/perennial herb/(July)Aug–Nov(Dec)/0–6890	Not expected to occur. No suitable habitat is present on the project site.
Ribes divaricatum var. *parishii*	Parish's gooseberry	None/None/1A	Riparian woodland/perennial deciduous shrub/Feb–Apr/210–985	Not expected to occur. No suitable habitat is present on the project site.
Sagittaria sanfordii	Sanford's arrowhead	None/None/1B.2	Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb (emergent)/May–Oct(Nov)/0–2135	Not expected to occur. No suitable habitat is present on the project site.
Senecio aphanactis	chaparral ragwort	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan–Apr(May)/45–2625	Not expected to occur. No suitable habitat is present on the project site.
Sidalcea neomexicana	salt spring checkerbloo m	None/None/2B.2	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas; alkaline, mesic/perennial herb/Mar–June/45–5020	Not expected to occur. No suitable habitat is present on the project site.
Suaeda esteroa	estuary seablite	None/None/1B.2	Marshes and swamps (coastal salt)/perennial herb/(May)July–Oct(Jan)/0–15	Not expected to occur. The project site is outside of the species' known elevation range and there is no suitable habitat present on the project site.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Symphyotrichum defoliatum	San Bernardino aster	None/None/1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic); near ditches, streams, springs/perennial rhizomatous herb/July–Nov/5–6695	Not expected to occur. No suitable habitat is present on the project site.

Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal Candidate for listing
SE: State listed as endangered
ST: State listed as threatened
California Native Plant Society Rare Plant Rank (CRPR)
CBR: Considered But Rejected
CRPR 1A: Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere
CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere
CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)"

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Amphibians				
Anaxyrus californicus	arroyo toad	FE/SSC	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur. No suitable habitat is present on the project site.
Lithobates pipiens (native populations only)	northern leopard frog	None/SSC	Adjacent to permanent and semi-permanent water in a range of habitats	Not expected to occur. No suitable habitat is present on the project site.
Spea hammondii	western spadefoot	None/SSC	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	Not expected to occur. No suitable habitat is present on the project site.
Taricha torosa (Monterey Co. south only)	California newt	None/SSC	Wet forests, oak forests, chaparral, and rolling grassland	Not expected to occur. No suitable habitat is present on the project site.
Reptiles				
Actinemys marmorata	western pond turtle	None/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	Not expected to occur. No suitable habitat is present on the project site.
Anniella stebbinsi	southern California legless lizard	None/SSC	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and moist sandy or loose, loamy soils	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Arizona elegans occidentalis	California glossy snake	None/SSC	Commonly occurs in desert regions throughout southern California. Prefers open sandy areas with scattered brush. Also found in rocky areas.	Not expected to occur. No suitable habitat is present on the project site.
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC	Hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas.	Not expected to occur. No suitable habitat is present on the project site.
Chelonia mydas	green sea turtle	FT/None	Shallow waters of lagoons, bays, estuaries, mangroves, eelgrass, and seaweed beds	Not expected to occur. No suitable habitat is present on the project site.
Crotalus ruber	red diamondback rattlesnake	None/SSC	Coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats	Not expected to occur. No suitable habitat is present on the project site.
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	Not expected to occur. No suitable habitat is present on the project site.
Salvadora hexalepis virgultea	coast patch-nosed snake	None/SSC	Brushy or shrubby vegetation; requires small mammal burrows for refuge and overwintering sites	Not expected to occur. No suitable habitat is present on the project site.
Thamnophis hammondii	two-striped gartersnake	None/SSC	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not expected to occur. No suitable habitat is present on the project site.
Birds				
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/PSE, SSC	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberrry; forages in grasslands, woodland, and agriculture	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Ammodramus savannarum (nesting)	grasshopper sparrow	None/SSC	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	Not expected to occur. No suitable habitat is present on the project site.
Aquila chrysaetos (nesting and wintering)	golden eagle	BCC/FP, WL	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not expected to occur. No suitable habitat is present on the project site.
Asio otus (nesting)	long-eared owl	None/SSC	Nests in riparian habitat, live oak thickets, other dense stands of trees, edges of coniferous forest; forages in nearby open habitats	Not expected to occur. No suitable habitat is present on the project site.
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Not expected to occur. No suitable habitat is present on the project site.
Buteo swainsoni (nesting)	Swainson's hawk	BCC/ST	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	Not expected to occur. No suitable habitat is present on the project site.
Campylorhynchus brunneicapillus sandiegensis (San Diego and Orange Counties only)	coastal cactus wren	BCC/SSC	Southern cactus scrub patches	Not expected to occur. No suitable habitat is present on the project site.
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT, BCC/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT, BCC/SE	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. No suitable habitat is present on the project site.
Coturnicops noveboracensis	yellow rail	BCC/SSC	Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water	Not expected to occur. No suitable habitat is present on the project site.
Elanus leucurus (nesting)	white-tailed kite	None/FP	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	Not expected to occur. No suitable habitat is present on the project site.
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE	Nests in dense riparian habitats along streams, reservoirs, or wetlands; uses variety of riparian and shrubland habitats during migration	Not expected to occur. No suitable habitat is present on the project site.
Falco peregrinus anatum (nesting)	American peregrine falcon	FDL, BCC/SDL, FP	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present	Not expected to occur. No suitable habitat is present on the project site.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FDL, BCC/SE, FP	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	Not expected to occur. No suitable habitat is present on the project site.
Icteria virens (nesting)	yellow-breasted chat	None/SSC	Nests and forages in dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush	Not expected to occur. No suitable habitat is present on the project site.
Laterallus jamaicensis coturniculus	California black rail	BCC/ST, FP	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None/SE	Nests and forages in coastal saltmarsh dominated by pickleweed (Salicornia spp.)	Not expected to occur. No suitable habitat is present on the project site.
Polioptila californica californica	coastal California gnatcatcher	FT/SSC	Nests and forages in various sage scrub communities, often dominated by California sagebrush and buckwheat; generally avoids nesting in areas with a slope of greater than 40%; majority of nesting at less than 1,000 feet above mean sea level	Not expected to occur. No suitable habitat is present on the project site.
Rallus obsoletus levipes	Ridgway's rail	FE/SE, FP	Coastal wetlands, brackish areas, coastal saline emergent wetlands	Not expected to occur. No suitable habitat is present on the project site.
Riparia riparia (nesting)	bank swallow	None/ST	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration	Not expected to occur. No suitable habitat is present on the project site.
Rynchops niger (nesting colony)	black skimmer	BCC/SSC	Nests on barrier beaches, shell banks, spoil islands, and saltmarsh; forages over open water; roosts on sandy beaches and gravel bars	Not expected to occur. No suitable habitat is present on the project site.
Setophaga petechia (nesting)	yellow warbler	BCC/SSC	Nests and forages in riparian and oak woodlands, montane chaparral, open ponderosa pine, and mixed-conifer habitats	Not expected to occur. No suitable habitat is present on the project site.
Sternula antillarum browni (nesting colony)	California least tern	FE/SE, FP	Forages in shallow estuaries and lagoons; nests on sandy beaches or exposed tidal flats	Not expected to occur. No suitable habitat is present on the project site.
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Fishes				
Catostomus santaanae	Santa Ana sucker	FT/None	Small, shallow, cool, clear streams less than 7 meters (23 feet) in width and a few centimeters to more than a meter (1.5 inches to more than 3 feet) in depth; substrates are generally coarse gravel, rubble, and boulder	Not expected to occur. No suitable habitat is present on the project site.
Rhinichthys osculus ssp. *3*	Santa Ana speckled dace	None/SSC	Headwaters of the Santa Ana and San Gabriel Rivers; may be extirpated from the Los Angeles River system	Not expected to occur. No suitable habitat is present on the project site.
Mammals				
Antrozous pallidus	pallid bat	None/SSC	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	Not expected to occur. No suitable habitat is present on the project site.
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/SSC	Coastal scrub, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon–juniper, and annual grassland	Not expected to occur. No suitable habitat is present on the project site.
Choeronycteris mexicana	Mexican long-tongued bat	None/SSC	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon–juniper woodland; roosts in caves, mines, and buildings	Not expected to occur. No suitable habitat is present on the project site.
Eumops perotis californicus	western mastiff bat	None/SSC	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Lasiurus xanthinus	western yellow bat	None/SSC	Valley–foothill riparian, desert riparian, desert wash, and palm oasis habitats; below 2,000 feet above mean sea level; roosts in riparian and palms	Not expected to occur. No suitable habitat is present on the project site.
Microtus californicus stephensi	south coast marsh vole	None/SSC	Tidal marshes	Not expected to occur. No suitable habitat is present on the project site.
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC	Coastal scrub, desert scrub, chaparral, cacti, rocky areas	Not expected to occur. No suitable habitat is present on the project site.
Nyctinomops femorosaccus	pocketed free-tailed bat	None/SSC	Pinyon–juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases; roosts in high cliffs or rock outcrops with drop-offs, caverns, and buildings	Not expected to occur. No suitable habitat is present on the project site.
Nyctinomops macrotis	big free-tailed bat	None/SSC	Rocky areas; roosts in caves, holes in trees, buildings, and crevices on cliffs and rocky outcrops; forages over water	Not expected to occur. No suitable habitat is present on the project site.
Onychomys torridus ramona	southern grasshopper mouse	None/SSC	Grassland and sparse coastal scrub	Not expected to occur. No suitable habitat is present on the project site.
Perognathus longimembris pacificus	Pacific pocket mouse	FE/SSC	fine-grained sandy substrates in open coastal strand, coastal dunes, and river alluvium	Not expected to occur. No suitable habitat is present on the project site.
Sorex ornatus salicornicus	southern California saltmarsh shrew	None/SSC	Saltmarsh, saltgrass, dense willow, bulrush	Not expected to occur. No suitable habitat is present on the project site.
Taxidea taxus	American badger	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Not expected to occur. No suitable habitat is present on the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Invertebrates				
Branchinecta sandiegonensis	San Diego fairy shrimp	FE/None	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. No suitable habitat is present on the project site.
Streptocephalus woottoni	Riverside fairy shrimp	FE/None	Vernal pools, non-vegetated ephemeral pools	Not expected to occur. No suitable habitat is present on the project site.

Status Legend:
FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal Candidate for listing
FDL: Federally Delisted
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California Fully Protected Species
WL: California Watch List Species
SE: State listed as endangered
ST: State listed as threatened
SDL: State Delisted

APPENDIX C

Cultural Resources

HISTORICAL RESOURCES COMPLIANCE REPORT FOR THE CROWTHER SEWER PIPELINE PROJECT

City of Placentia, Orange County, California

PREPARED FOR:

CITY OF PLACENTIA

401 East Chapman Avenue
Placentia, California 92870
Contact: Mr. Masoud Sepahi, City Engineer

AND

CALIFORNIA DEPARTMENT OF TRANSPORTATION, DISTRICT 12

District Encroachment Permit Office
1750 East 4th Street
Santa Ana, California 92705

Prepared by _____ January 9, 2019
Kara R. Dotter, MSHP Date
Principal Architectural Historian
DUDEK
605 Third Street
Encinitas, California 92024

Approved by _____ _____
[NAME] Date
[TITLE]
Caltrans District 12
1750 East 4th Street, Suite 100
Santa Ana, California 92705

JANUARY 2019

HISTORICAL RESOURCES COMPLIANCE REPORT FOR THE CROWTHER SEWER PIPELINE PROJECT

City of Placentia, Orange County, California

PREPARED FOR:

CITY OF PLACENTIA

401 East Chapman Avenue
Placentia, California 92870
Contact: Mr. Masoud Sepahi, City Engineer

PREPARED BY:

Linda Kry, BA; Kara R. Dotter, MSHP; Erica Nicolay, MA;
and Micah Hale, PhD, RPA

DUDEK

38 North Marengo Avenue
Pasadena, California 91101

JANUARY 2019

TABLE OF CONTENTS

SECTION PAGE

ATTACHMENTS

TABLES

INTENTIONALLY LEFT BLANK

1 SUMMARY OF FINDINGS

Project Description: The City of Placentia (City) proposes to upsize the existing sewer pipeline under Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline Project (proposed project). The entirety of the proposed project is within the public right-of-way (ROW). The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 linear feet. Upon completion, the existing 7,300 linear feet of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections.

Purpose and Scope of the Investigation: The City retained Dudek to prepare a cultural resources study in support of the proposed project. The intent of this report is to achieve compliance with the California Environmental Quality Act (CEQA) for the proposed project as it relates to assessing potential impacts to cultural resources (built environment and archaeological) considered historic for the purposes of CEQA. Furthermore, the proposed project would encroach on a State of California ROW, which requires an Encroachment Permit issued by California Department of Transportation (Caltrans) District 12. Therefore, Dudek prepared a cultural resources report in the format of a Historical Resources Compliance Report, which is used by Caltrans for projects without federal involvement. This report was prepared in accordance with Caltrans' most recent edition of the Standard Environmental Reference, Volume 2, Cultural Resources.

Results of the Investigation: No previously recorded built environment historical resources were identified within the proposed project site, but one was identified in the immediate vicinity as a result of the California Historical Resources Information System (CHRIS) records search. Dudek conducted a reconnaissance-level survey of the buildings located along the proposed pipeline alignment on December 7, 2018. Thirteen properties adjacent to the proposed project alignment are 45 years old or older; built in or before 1973 (historic-age). One of the properties, the Placentia Mutual Orange Association packing plant, was evaluated in 2002 and identified as ineligible for listing in the National Register of Historic Places (NRHP) on its own; the property is also listed in the State Historic Resources Inventory as a Point of Historical Interest. However, the building is more than 40 feet away from the Project Area Limits (PAL) and the main elevation faces onto South Melrose Street. Additionally, archival research indicates the elevation facing West Crowther Avenue was substantially altered between 1980 and 1995 by the removal of the one-story-tall loading docks originally lining that elevation and insertion of modern sliding windows. None of the remaining 12 properties containing historic age buildings are known to have been previously recorded or evaluated under NRHP or California Register of Historical Resources criteria or designated as historical resources through a local preservation ordinance. All properties containing historic-age buildings are more than 40 feet from construction activities related to the proposed project. As such, there is no

potential for the project to impact these structures. Therefore, the proposed project would have no impact to any built environment historical resources.

No archaeological resources were identified within the proposed project site or immediate vicinity as a result of the CHRIS records search or Native American correspondence. The proposed project site is situated completely within the public ROW and the proposed project consists of upgrading an existing sewer line, which means much of the ground disturbance will be within previously disturbed areas. However, it is always possible that intact archaeological deposits are present at subsurface levels. Therefore, the area is considered to be of low sensitivity for encountering archaeological deposits. Standard protection measures for unanticipated discoveries of human remains, archaeological resources, and paleontological resources have been provided.

2 PROJECT DESCRIPTION

2.1 Project Location

The project site is located in the southwest portion of the City in the County of Orange (County). Regionally, the City is bounded by the City of Brea to the north, the City of Yorba Linda to the east, the City of Anaheim to the south, and the City of Fullerton to west. Generally, the project site is located north of the State Route (SR-) 91 and SR-57 intersection in Anaheim. The proposed project site contains an existing 10-inch diameter sewer, which flows westerly on West Crowther Avenue approximately 3,200 feet, then increasing to 12-inches in diameter as it turns south on South Placentia Avenue for 2,200 feet. The sewer pipeline then turns west on West Orangethorpe Avenue for an additional 1,900 feet before connecting to Orange County Sanitation District's 48-inch diameter Newhope-Placentia Trunk Sewer 230 linear feet north of the intersection with South State College Boulevard, on the western side of the intersection of East Orangethorpe Avenue and South State College Boulevard. The Newhope-Placentia Trunk Sewer was installed in 2017 with an eastern 12-inch lateral connection on West Orangethorpe Avenue for the City's existing 12-inch line. The entirety of the proposed project is within the public ROW. The proposed project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Attachment A, Figure 1, Project Location).

2.2 Scope of Project

The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed project. The City's 2018 Sanitary Sewer Master Plan and Condition Assessment identified specific deficiencies within the City's wastewater collection system based on existing and future conditions, largely due to redevelopment. One of the largest proposed developments is the Transit-Oriented Development Zone Project, located just south of the existing Metrolink Station and train tracks (Attachment A, Figure 2, Project Alignment). The Transit-Oriented Development Zone Project includes the redevelopment of approximately 22 acres of land. The existing land use types range from single-family residential to industrial, but will be re-zoned to multifamily residential, resulting in increased sewer flow to the existing collection system. According to the Sewer Master Plan, upon build out of the Transit-Oriented Development Zone, the existing wastewater collection systems will be undersized. To accommodate the proposed redevelopment, the Sewer Master Plan recommends upsizing the existing sewer pipelines located along Crowther Avenue, beginning at Bradford Avenue to Placentia Avenue, along Placentia Avenue to Orangethorpe Avenue, and ending at Orangethorpe Avenue and State College Boulevard. The proposed project involves the construction of a completely independent parallel pipeline to replace the existing pipeline. The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 linear feet. Upon completion, the existing 7,300 linear feet of 10-inch and 12-inch pipeline will be

abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainline connections.

2.3 Project Area Limits

In coordination with the City, Dudek Principal Architectural Historian Kara R. Dotter, MSHP, delineated the Project Area Limits (PAL) map (Attachment A, Figure 3, Project Area Limits). The PAL was approved by Andrew Gonzales, City Senior Planner. Based on a review of the proposed project description and design plans, it was determined that the PAL should be limited to the project footprint that includes the public ROW wherein improvements will be made. The vertical extent of the PAL is 15 feet below ground level (maximum potential excavation depth).

3 CONSULTING PARTIES AND PUBLIC PARTICIPATION

3.1 Native American Heritage Commission

Dudek sent a request to the Native American Heritage Commission (NAHC) to search the Sacred Lands File for any Native American cultural resources on October 30, 2018. Dudek received a reply from the NAHC on November 15, 2018, stating a negative finding for any cultural resources within the Sacred Lands File. Because the Sacred Lands File search does not include an exhaustive list of Native American cultural resources, the NAHC suggested contacting Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the proposed project. The NAHC provided the contact information of 10 individuals and/or entities to contact along with the Sacred Lands File search results. Dudek sent letters to each contact listed by the NAHC on November 16, 2018. A representative of the Gabrieleño Band of Mission Indians – Kizh Nation replied via email on November 26, 2018, stating that they would like to partake in formal consultation with the City. No other responses have been received. This outreach was conducted for informational purposes only and did not constitute formal government-to-government consultation as specified by Assembly Bill 52, which is discussed in detail in the following section. Documents related to the NAHC Sacred Lands File search and tribal outreach are included in Attachment B.

3.2 Native American Groups

The proposed project is subject to compliance with Assembly Bill 52 (PRC Section 21074). Assembly Bill 52 requires consideration of impacts to "tribal cultural resources" as part of the CEQA process, and that the lead agency (the City) notify California Native American tribal representatives (that have requested notification) who are traditionally or culturally affiliated with the geographic area of the proposed project. The City, with the assistance of Dudek, contacted all NAHC-listed California Native American tribal representatives that have requested project notification pursuant to Assembly Bill 52 on November 18, 2018 (Table 1). To date, one response was received from Chairman Andrew Salas; this response is summarized in Table 1. The confidential Assembly Bill 52 consultation results are included in Attachment C.

Table 1. Assembly Bill 52 Native American Tribal Outreach Results

Native American Tribal Representatives	Address	Method of Notification	Response to City Notification Letters
Joyce Stanfield Perry, Tribal Manager Juaneño Band of Mission Indians – Acjachemen Nation	4955 Paseo Segovia Irvine, California, 92603	Certified Mail sent November 20, 2018	None to date

Table 1. Assembly Bill 52 Native American Tribal Outreach Results

Native American Tribal Representatives	Address	Method of Notification	Response to City Notification Letters
Andrew Salas, Chairman Gabrieleño Band of Mission Indians – Kizh Nation	P.O. Box 393 Covina, California, 91723	Certified Mail sent July 16, 2018	Received November 26, 2018, via email from Chairman Andrew Salas. Chairman Salas' response was received as a result of the informal tribal outreach process. In his response, Chairman Salas requested consulting party status and included in his email a map of tribal territories. The email was forwarded to the City to augment the ongoing consultation process.

3.3 Other Interested Party Correspondence

On January 2, 2019, Dudek architectural historian, Kara R. Dotter, sent a contact letter via email to the Orange County Historical Society. The letter briefly described the proposed project and requested information about cultural resources near the project area. Dudek currently is awaiting their response.

4 SUMMARY OF IDENTIFICATION EFFORTS

4.1 CHRIS Records Search

On October 29, 2018, Dudek completed a records search at the South Central Coastal Information Center of the proposed project site and a 0.5-mile surrounding buffer. The records search included review of mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation site records; technical reports; archival resources; and ethnographic references. Confidential records search results are provide in Attachment D.

A total of 21 studies were conducted within a 0.5-mile radius of the proposed project site (Table 2). Of those, four studies intersected the proposed project site: OR-01596, OR-02256, OR-03822, and OR-04104. There are 12 previously recorded resources within a 0.5-mile radius of the proposed project site (Table 3). One resource, P-30-162291, borders the proposed project site. No resources intersect the proposed project site.

Previous Technical Studies

Of the 21 studies conducted in the 0.5-mile radius of the proposed project site, four studies intersected the proposed project site, including OR-01596, OR-02256, OR-03822, OR-04104, and two studies border the proposed project site, including OR-3026 and OR-4079. These six studies are summarized briefly below. Table 2 summarizes all 21 studies conducted within the 0.5-mile radius.

Table 2. Previously Conducted Technical Studies within a 0.5-Mile Radius of the Proposed Project Site

Report	Author: Affiliation	Year	Title	Proximity to Project site
OR-01596	Clewlow, William C. Jr.: University of California, Los Angeles	1974	Preliminary Report of the Potential Impact on Archaeological Resources of the Proposed Gas Transmission Pipeline From Los Angeles Harbor to Yorba Linda - Southern California Gas Co.: Environmental Analysis	Intersecting
OR-02042	Duke, Curt: LSA Associates, Inc.	1999	Cultural Resource Assessment for the AT&T Wireless Services Facility Number R070, County of Orange, California	Outside
OR-02256	Demcak, Carol R.: Archaeological Resource Management Corp.	1999	Cultural Resources Assessments for Orange County Sanitation District	Intersecting
OR-02716	Duke, Curt: LSA Associates, Inc.	2001	Cultural Resource Assessment Cingular Wireless Facility No. Sc 049-01 Orange County, California	Outside
OR-02735	Duke, Curt: LSA Associates, Inc.	2002	Cultural Resource Assessment at & T Wireless Services Facility No. 13306a Orange County, California	Outside
OR-02739	Demcak, Carol R.: Archaeological Resource Management Corp.	2002	Archaeological Assessment for Orangethorpe Avenue Reconstruction Project (#4440) From Raymond Avenue to Acacia Avenue, City of Fullerton, California	Outside

Table 2. Previously Conducted Technical Studies within a 0.5-Mile Radius of the Proposed Project Site

Report	Author: Affiliation	Year	Title	Proximity to Project site
OR-02746	Duke, Curt: LSA Associates, Inc.	2002	Cultural Resource Assessment at & T Wireless Services Facility No. 130070b Orange County, California	Outside
OR-02752	Duke, Curt: LSA Associates, Inc.	2002	Cultural Resource Assessment at & T Wireless Services Facility No. 13226a Orange County, California	Outside
OR-02910	Carmack, Shannon and Terri Fulton: LSA Associates, Inc.	2005	Verizon Wireless Pinewood-handal Facility	Outside
OR-03026	Lapin, Philippe: California Department of Transportation	2003	Landscaping and Irrigation at Orangethorpe Avenue On-ramp Ce Request, in the City of Placentia, Orange County, California	Bordering
OR-03083	Kyle, Carolyn E.: Kyle Consulting	2004	Cultural Resource Assessment for AT&T Wireless Facility 950-013-075b Located at 110-140 North Bradford Avenue City of Placentia Orange County, California	Outside
OR-03091	Allen, Kathleen C.: Archaeological Resource Management Corp.	2003	Records Search for Becthel Project #950023033c, Lincoln Imports, Placentia California	Outside
OR-03092	Demcak, Carol R.: Archaeological Resource Management Corp.	2003	Report of Archaeological Survey for Bechtel Project #950023033c, Lincoln Imports, Placentia, California	Outside
OR-03298	Bai, Tang, Michael Hogan, Mariam Dahdul: CRM Tech	2003	Historic Resources Compliance Report: Third Main Track and Grade Separation Project Hobart (MP 148.9) to Basta (163.3) BNSF/Metrolink East-West Main Line Railroad Track Vernon to Fullerton, Los Angeles and Orange Counties, California	Outside
OR-03650	Wayne, H. Bonner: Michael Brandman Associates	2007	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate La23632A (Crowther Rental), 505 Crowther Avenue, Placentia, Orange County, California	Outside
OR-03721	Bonner, Wayne H.: Michael Brandman Associates	2007	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate LA23632C (Crowther Rental), Approximately 290 Feet West-Southwest of Goetz Place and West Crowther Avenue Intersection, Placentia Orange County, California	Outside
OR-03822	Harper, Caprice: Bonterra Consulting	2006	Historic Property Survey Report and Archaeological Survey Report for the State Route 57 Northbound Widening Project 0.3 km (02 mi) South of Orangethorpe Avenue to 0.2 km (0.1 mi) North of Lambert Road in the Cities of Placentia, Fullerton, and Brea, Orange County, California	Intersecting
OR-03864	Wood, Catharine M.: ICF Jones and Stokes	2008	Archaeological Survey Report - Finding of no Archaeological Resources present for the State Route 91 Westbound Widening Project from State Route 57 to Interstate 5, Cities of Anaheim and Fullerton, Orange County, California	Outside

Table 2. Previously Conducted Technical Studies within a 0.5-Mile Radius of the Proposed Project Site

Report	Author: Affiliation	Year	Title	Proximity to Project site
OR-03865	Paul, Daniel: ICF Jones and Stokes	2008	Historic Resources Evaluation Report - State Route 91 Westbound Widening Project from State Route 57 to Interstate 5, Cities of Anaheim and Fullerton, Orange County, California District 12 - Orange _ 91 - PM 5.4 to 0.9 (KP 1.4 to 8.8)	Outside
OR-04079	deGraaf, Larry, Jertberg, Pat, Schmidt, Marie, Octtavain, April, Torres, Elvia, Rospaw, Cecil, Aunis, Karen, Nebeker, Karen, Clark, John, Carlson, Robert, Deeble, Deborah, Nagle, Timothy, Snyder, Gretchen, Villareal, Gloria, Myers, William, Turner, Laura,: Marsh and Associates	1988	Placentia Historic Resources Survey	Bordering
OR-04104	Antram, Marie, Orr, Shannon, Vasquez, Liliana, L. de Graf, and Jertberg, Pat: City of Placentia and Placentia Historical Committee	2002	Historic Resource Inventory for the City of Placentia: Update 2002	Intersecting

OR-01596 is an archaeological report for the proposed gas transmission pipeline from Los Angeles Harbor to Yorba Linda, prepared by Joe Okoye in 1974. This study consisted of a records search for the proposed pipeline. No archaeological resources within the current proposed project were identified as part of the study.

OR-02256 is a cultural resource assessment for the Orange County Sanitation District prepared by Carol R. Demcak in 1999. The study consisted of a records search and ethnographic research. The study found that many areas of Orange County Sanitation District were sensitive for prehistoric archaeological resources; however, no archaeological resources were identified within the current proposed project site.

OR-03026 is a negative archaeological survey report for the landscaping and irrigation at Orangethorpe Avenue conducted by Philippe Lapin and Patricia Tuck in 2003. The study involved a records search and survey. No resources were identified within the current proposed project site.

OR-03822 is a Historic Property Survey Report and Archaeological Survey Report for the State Route 57 Northbound Widening Project by Kip Harper in 2006. The study included a records search, a survey, and

ethnographic research. The study did not identify any archaeological resources within the current proposed project site. The study also found that the project would not have an impact on any historic buildings.

OR 04079 is a Historic Resource Survey for the City of Placentia conducted by Marsh and Associates in 1996. The study found 357 buildings over 40 years old, which were considered architecturally or historically significant to the community. Thirty of these buildings appeared eligible for the NRHP.

OR-04104 is a Historic Resource Inventory for the City of Placentia prepared by Marie Antram, Shannon Orr, and Liliana Vasquez in 2002. The study was an update for the 1996 Historic Resource Survey, conducted in 1996 (OR-4079). The study found 35 buildings that could be listed on the NRHP. On this list was P-30-162291, at 341 South Melrose Street, which borders the current proposed project site.

Previously Recorded Cultural Resources

Twelve resources were identified within a 0.5-mile radius of the proposed project site. All of these resources are built-environment resources. One resource, P-30-162291, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the proposed project site. This resource is listed on the Historic Resources Inventory, and was determined to be ineligible on its own for the NRHP. Table 3 summarizes all 12 resources that have been identified within a 0.5-mile radius.

Table 3. Previously Recorded Resources within a 0.5-Mile Radius of the Proposed Project Site

Primary No.	Resource Name	Resource Type	Age	Recording Events	CHRS Code	Significance Criteria (if applicable)	Proximity to Proposed Project Site
P-30-162291	Placentia Mutual Orange Assn	Building	Historic	1984 (State Historical Resources Commission, Dept. of Parks & Rec); 2002 (Marie Antram, City of Placentia)	7N (orig. 4D1)[1]	A, B, and C	Bordering
P-30-176574	Spanish Colonial Revival home; 990 South Placentia Avenue	Building	Historic	1999 (D. McLean, LSA)	6Z	n/a	Outside

Table 3. Previously Recorded Resources within a 0.5-Mile Radius of the Proposed Project Site

Primary No.	Resource Name	Resource Type	Age	Recording Events	CHRS Code	Significance Criteria (if applicable)	Proximity to Proposed Project Site
P-30-176663	Atchison, Topeka & Santa Fe RR, Burlington Northern Santa Fe RR	Structure	Historic	2002 (D. Ballester, CRM Tech); 2002 (Bai Tang and Josh Smallwood, CRM Tech); 2007 (S. McCormick); 2012 (MK Meiser, AECOM); 2016	6Z	n/a	Outside
P-30-177078	Stradley House	Building	Historic	1989 (Diann Marsh, City of Placentia)	7N (orig. 4D)[1]	A and C	Outside
P-30-177090	Valencia High School (Includes Bradford School)	Building	Historic	2002 (Shannon Orr, City of Placentia)	3S	A, B, and C	Outside
P-30-177095	Allec House	Building	Historic	2002 (Marie Antram, City of Placentia)	5S2	A, B, and C	Outside
P-30-177096	Ranney Ranch	Building	Historic	2002 (Marie Antram, City of Placentia)	3S	A, B, and C	Outside
P-30-177101	Gonzales House	Building	Historic	2002 (Marie Antram, City of Placentia)	5S1	C	Outside
P-30-177102	Old Placentia Presbyterian Church	Building	Historic	2002 (Marie Antram, City of Placentia)	7N1 (orig. 4D7)[1]	A, B, and C	Outside
P-30-177103	Simon House	Building	Historic	2002 (Marie Antram, City of Placentia)	7N1 (orig. 4D7)[1]	A, B, and C	Outside
P-30-177111	Placentia Water Tower	Structure	Historic	2002 (Shannon Orr, City of Placentia)	7N (orig. 3S or 4X)[1]	A and C	Outside
P-30-177112	Telephone Exchange Building	Building	Historic	2002 (Marie Antram, City of Placentia)	7N1 (orig. 4D7)[1]	A and C	Outside

[1] The 2002 report by Antram identified these properties as not being individually significant in their then-current condition, but that they may be a contributor to a future historic district. As of December 2018, those future historic districts had not been identified and evaluated.

4.2 Building Development Research

In addition to the CHRIS records search, archival resources consulted include historic aerial photographs from 1946, 1652, 1964, 1966, 1972, 1980, 1995, 2002, 2005, 2010, 2012, and 2014, as well as Orange County Assessor information (NETR 2018, ParcelQuest 2018). Dudek architectural historian Kara R. Dotter also

conducted a reconnaissance-level survey along the proposed pipeline route on December 7, 2018. Of the 12 historical resources identified in the CHRIS records search results (Table 3, above), all are outside of the PAL. Although the Placentia Mutual Orange Association packing plant property (P-30-163391) is adjacent to the PAL, the building is more than 40 feet away from the PAL and the main elevation faces onto South Melrose Street. Additionally, archival research indicates the elevation facing West Crowther Avenue was substantially altered between 1980 and 1995 by the removal of the one-story-tall loading docks originally lining that elevation and insertion of modern sliding windows. For this reason, the building is not individually eligible for listing in the NRHP, but it is recognized as a Point of Historic Interest and is listed in the Historical Resource Inventory. A further 12 historic-era properties exist on parcels adjacent to the proposed pipeline alignment; however, all such properties are at least a minimum of 40 feet outside of the PAL and the reconnaissance survey revealed that they are heavily altered, some to the point of being altered beyond recognition.

5 CEQA HISTORICAL RESOURCES IDENTIFIED

5.1 Newly Evaluated Resources within Project Area Limits

No historic era built environment resources are located in the PAL and therefore none were evaluated within the proposed project site.

5.2 Previously Evaluated Historical Resources within Project Area Limits

No resource(s) within the proposed project site were previously listed or determined eligible for the NRHP, previously determined to meet California Register of Historical Resources eligibility criteria, and/or previously determined to be historical resource(s) for purposes of CEQA pursuant to PRC 15064.5(a) and the determination(s) is/are still valid.

5.3 Built Environment Resources

No historic built environment resources were identified within the proposed project site as a result of the CHRIS records search. The proposed project site is situated completely within the public ROW. One built environment resource, the NRHP-ineligible, State Historic Resources Inventory-listed Placentia Mutual Orange Association building, is sited on a property adjacent to, but outside of, the PAL. The elevation of the building facing the PAL is a minimum of 40 feet away and was altered previously by the removal of the original loading bays along the full elevation length and insertion of inappropriate windows. Therefore, the proposed project would have no impact to historic built environment resources, and as such there are no management recommendations.

5.4 Archaeological Resources

No archaeological resources were identified within the proposed project site or immediate vicinity as a result of the CHRIS records search or Native American coordination. The proposed project site is situated completely within the public ROW and the proposed project consists of upgrading an existing sewer line, which means much of the ground disturbance will be within previously disturbed areas. Therefore, the area is considered to be of low sensitivity for encountering archaeological deposits. Despite the low probability of encountering archaeological deposits it is always possible that such deposits exist subsurface. Management recommendations to reduce potential impacts to unanticipated archaeological and paleontological resources and human remains during construction activities are provided below.

Unanticipated Discovery of Archaeological Resources

All construction crew members should be alerted to the potential to encounter sensitive archaeological material. In the event that archaeological resources (sites, features, or artifacts) are exposed during

construction activities for the proposed project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole marine shell, burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appeared to have been used for chopping, drilling, or grinding; projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the significance of the find under CEQA (14 CCR 15064.5(f); PRC Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

Unanticipated Discovery of Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has determined, within 2 working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the county coroner determines that the remains are, or are believed to be, Native American, he or she shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall complete his/her inspection within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.

Unanticipated Discovery of Paleontological Resources

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state laws and regulations (CEQA). Paleontological resources are explicitly afforded protection by CEQA, specifically in Section V(c) of CEQA Guidelines Appendix G, the Environmental Checklist Form, which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or . . . unique geological feature[s]" (14 CCR 15000 et seq.). Further, CEQA provides that, generally, a resource shall be considered "historically significant" if it has yielded or may be likely to yield information important in prehistory (14 CCR 15064.5 [a][3][D]).

In the event that paleontological resources (silicified shell, bone, or other features) are exposed during construction activities for the proposed project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified paleontologist can evaluate the significance of the find. This analysis should comply with guidelines and significance criteria specified by the Society of Vertebrate Paleontology. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

INTENTIONALLY LEFT BLANK

6 BIBLIOGRAPHY

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

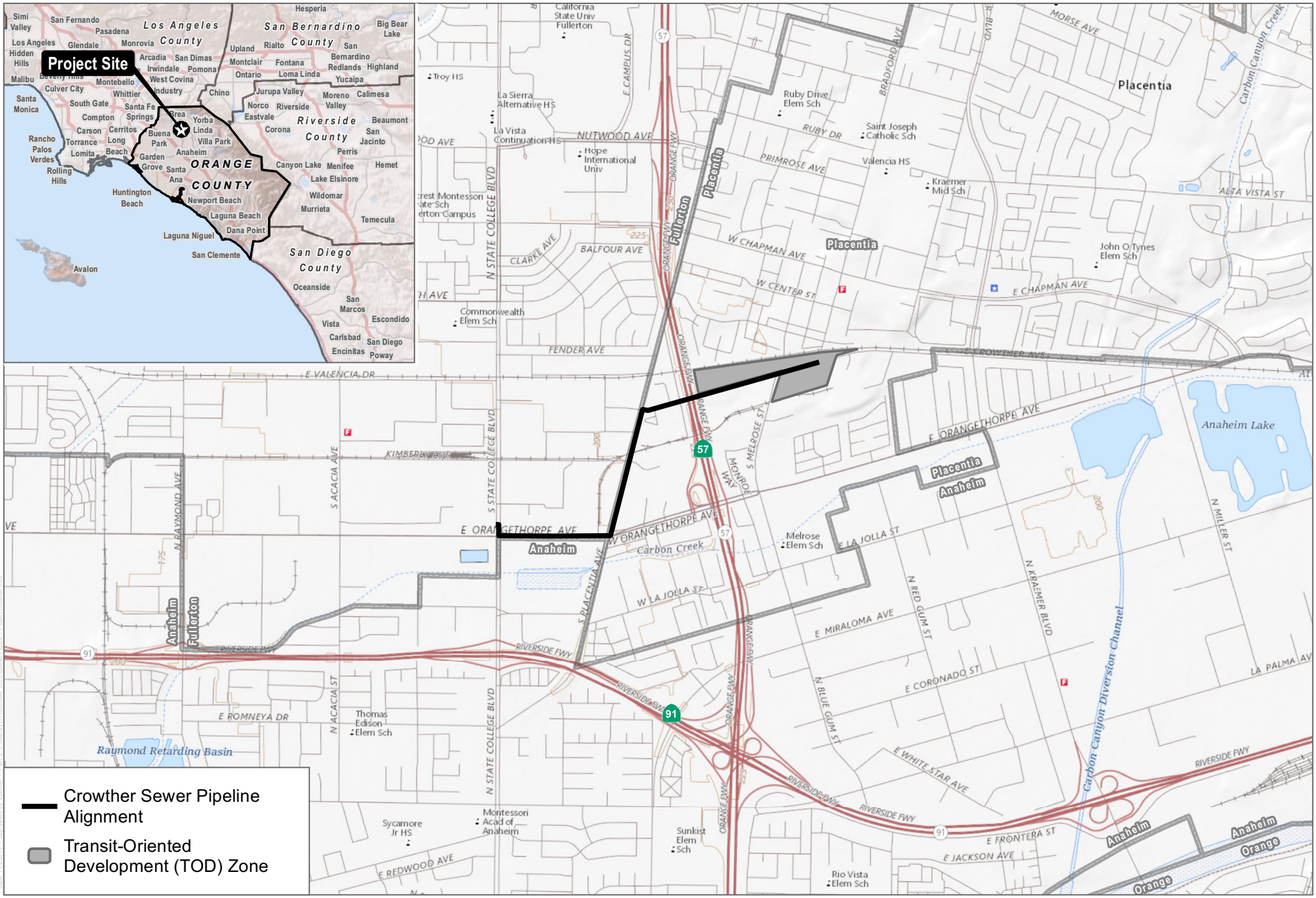
NETR (Nationwide Environmental Title Research Inc.). 2018. Historical aerial photographs from 1946, 1652, 1964, 1966, 1972, 1980, 1995, 2002, 2005, 2010, 2012, and 2014. Accessed December 7, 2018. https://www.historicaerials.com/viewer.

ParcelQuest. 2018. Building information on file with the Assessor's Office of Orange County. Accessed December 7, 2018. https://www.historicaerials.com/viewer.

INTENTIONALLY LEFT BLANK

ATTACHMENT A

Figures



SOURCE: USGS

DUDEK

0 1,100 2,200 Feet

FIGURE 1

Project Location

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration

SOURCE: Bing Maps

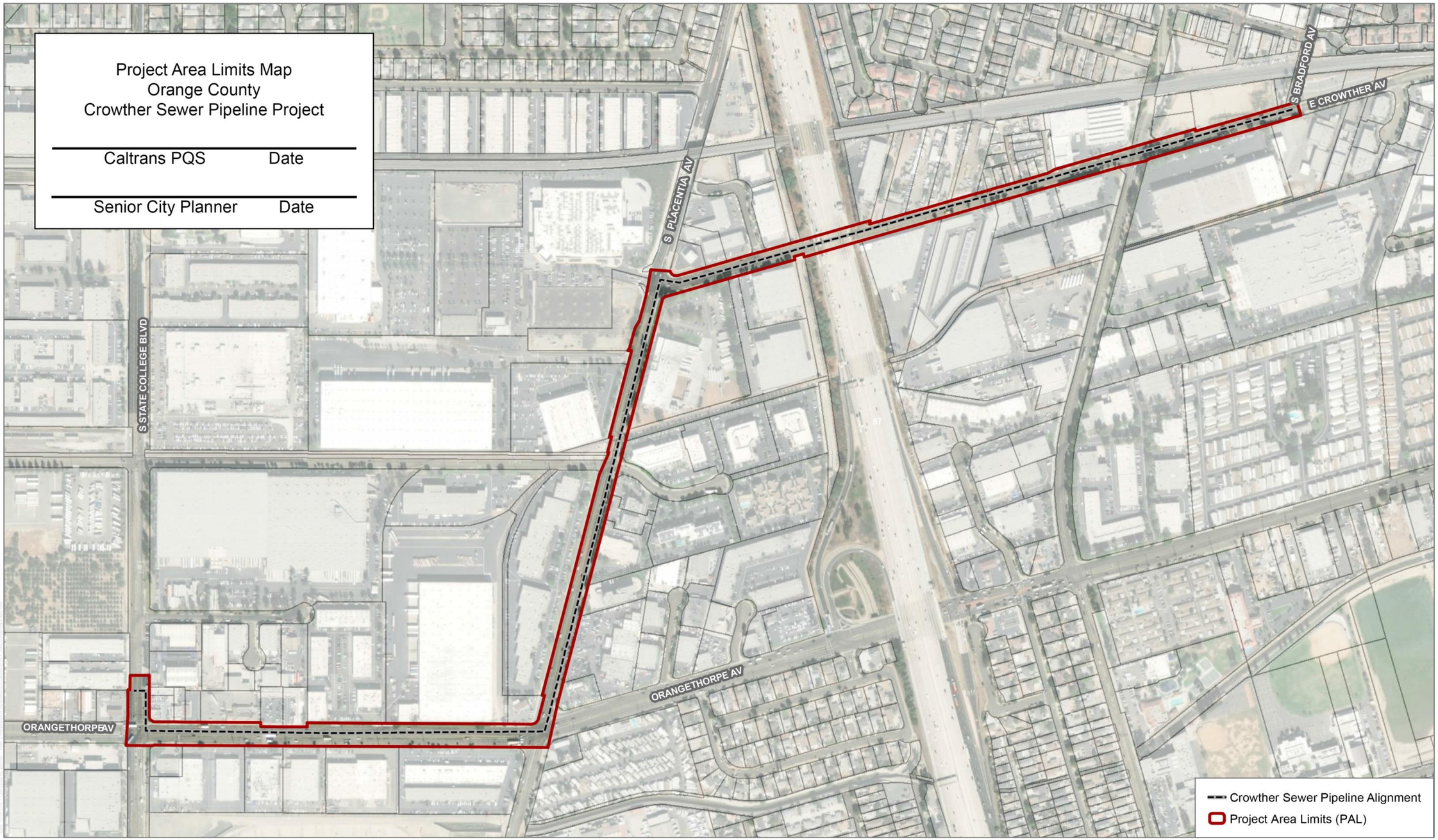
DUDEK

0 200 400 Feet

FIGURE 2

Project Alignment

Crowther Sewer Pipeline Initial Study/Mitigated Negative Declaration



SOURCE: Bing Maps

DUDEK 0 210 420 Feet

FIGURE 3

Project Area Limits

Crowther Sewer Pipeline

ATTACHMENT B

NAHC Sacred Lands File Results and Tribal Outreach

Linda Kry

From: Erica Nicolay
Sent: Tuesday, October 30, 2018 9:21 AM
To: 'nahc@nahc.ca.gov'
Subject: SLF Search and Consultation List request - Crowther Pipeline Project (11113)
Attachments: Dudek-Crowther Pipeline-11113.pdf

To whom it may concern,

Please find the attached Sacred Lands File and Native American Contacts List Request for the Crowther Pipeline Project (11113). The City of Placentia proposes to improve existing deficiencies within the sewer collection system along West Crowther Avenue, South Placentia Avenue, and West Orangethorpe Avenue. The project will include potholing, geotechnical boring investigations, and the installation of 7,300 linear feet of new sewer pipeline parallel to the existing pipeline, which will be abandoned post construction.

If you have any comments or concerns please contact me at this email or at the phone numbers listed below.

Erica Nicolay, MA
Archaeologist

DUDEK
38 North Marengo Avenue
Pasadena, California 91101
O: 626.204.9830
C: 760.936.7952
Ext. 5230
www.dudek.com

Linda Kry

From: Erica Nicolay
Sent: Wednesday, November 14, 2018 8:25 AM
To: 'nahc@nahc.ca.gov'
Subject: FW: SLF Search and Consultation List request - Crowther Pipeline Project (11113)
Attachments: Dudek-Crowther Pipeline-11113.pdf

Hello,

I would like to check on the following NAHC request that was originally sent on October 30, 2018.

Thanks,

Erica

From: Erica Nicolay
Sent: Tuesday, October 30, 2018 9:21 AM
To: nahc@nahc.ca.gov
Subject: SLF Search and Consultation List request - Crowther Pipeline Project (11113)

To whom it may concern,

Please find the attached Sacred Lands File and Native American Contacts List Request for the Crowther Pipeline Project (11113). The City of Placentia proposes to improve existing deficiencies within the sewer collection system along West Crowther Avenue, South Placentia Avenue, and West Orangethorpe Avenue. The project will include potholing, geotechnical boring investigations, and the installation of 7,300 linear feet of new sewer pipeline parallel to the existing pipeline, which will be abandoned post construction.

If you have any comments or concerns please contact me at this email or at the phone numbers listed below.

Erica Nicolay, MA
Archaeologist

DUDEK
38 North Marengo Avenue
Pasadena, California 91101
O: 626.204.9830
C: 760.936.7952
Ext. 5230
www.dudek.com

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Crowther Pipeline Project (11113)

County: Orange

USGS Quadrangle

Name: Yorba Linda, Orange, Anaheim

Township: 3S, 4S Range: 9W Section(s): 1, 2, 25, 30, 31, 35, 36

Company/Firm/Agency:

Dudek

Contact Person: Erica Nicolay

Street Address: 38 North Marengo Avenue

City: Pasadena Zip: 91101

Phone: (760) 936-7952 Extension: N/A

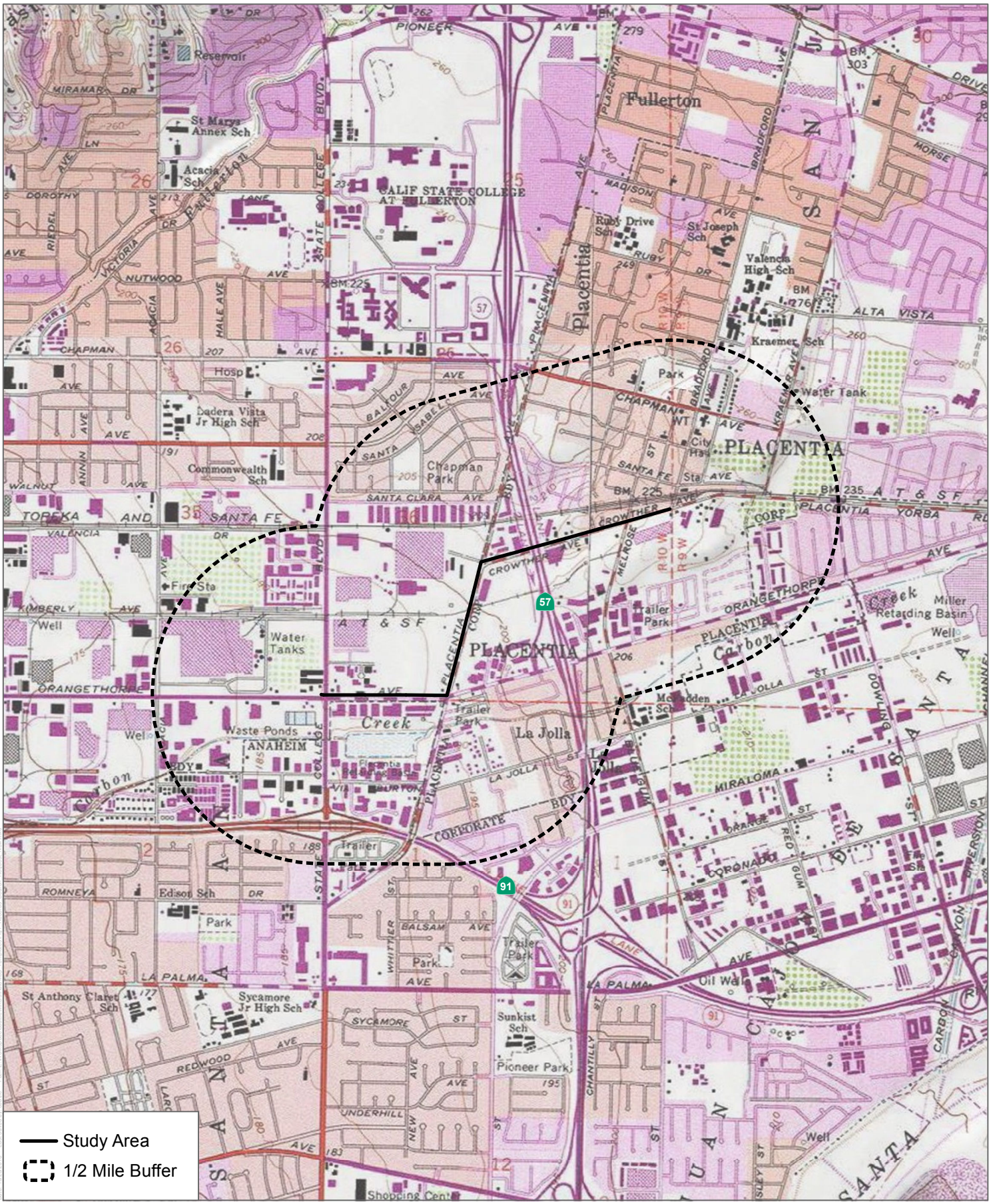
Fax: (760) 632-0164

Email: enicolay@dudek.com

Project Description:

The City of Placentia proposes to improve existing deficiencies within the sewer collection system along West Crowther Avenue, South Placentia Avenue, and West Orangethorpe Avenue. The project will include potholing, geotechnical boring investigations, and the installation of 7,300 linear feet of new sewer pipeline parallel to the existing pipeline, which will be abandoned post construction.

☑ Project Location Map is attached



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 285 570 Meters
1:24,000

Records Search

Crowther Pipeline

Linda Kry

From: Sanchez, Katy@NAHC <Katy.Sanchez@nahc.ca.gov>
Sent: Thursday, November 15, 2018 12:23 PM
To: Erica Nicolay
Subject: NAHC SLF Results
Attachments: Nov Nicolay Crowther.docx; Nov Nicolay Crowther.pdf

Katy Sanchez
Associate Environmental Planner
Native American Heritage Commission
(916) 373-3712

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

November 15, 2018

Erica Nicolay
Dudek

VIA Email to: enicolay@dudek.com

RE: Crowther Pipeline Project (11113), Orange County.

Dear Ms. Nicolay:

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 positive. Please contact the Juaneno Band of Mission Indians-Acjachemen Nation on the attached list for more information. 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 me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: katy.sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

KATY SANCHEZ
Associate Environmental Planner

Attachment

Native American Heritage Commission
Native American Contacts List
11/15/2018

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina ,CA 91723
admin@gabrielenoindians.org
(626) 926-4131

Gabrielino-Tongva Tribe
Charles Alvarez, Councilmember
23454 Vanowen St. Gabrielino
West Hills ,CA 91307
roadkingcharles@aol.com
(310) 403-6048

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel ,CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell
(626) 286-1262 Fax

Juaneño Band of Mission Indians
Sonia Johnston, Tribal Chairperson
P.O. Box 25628 Juaneno
Santa Ana ,CA 92799
sonia.johnston@sbcglobal.net

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 Gabrielino Tongva
Los Angeles ,CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Juaneno Band of Mission Indians Acjachemen Nation
Matias Belardes, Chairperson
32161 Avenida Los Amigos Juaneno
San Juan Capistrano ,CA 92675
kaamalam@gmail.com
(949) 444-4340 (Cell)

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Chairman
P.O. Box 490 Gabrielino Tongva
Bellflower ,CA 90707
gtongva@gmail.com
(562) 761-6417 Voice/Fax

Juaneno Band of Mission Indians Acjachemen Nation
Teresa Romero, Chairwoman
31411-A La Matanza Street Juaneno
San Juan Capistrano ,CA 92675
tromero@juaneno.com
(949) 488-3484
(949) 488-3294 Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Chairperson
80839 Camino Santa Juliana Gabrielino
Indio ,CA 92203
lcandelaria1@gabrielinotribe.org

Juaneno Band of Mission Indians Acjachemen Nation
Joyce Perry, Tribal Manager
4955 Paseo Segovia Juaneno
Irvine ,CA 92612
kaamalam@gmail.com
(949) 293-8522

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed: Crowther Pipeline Project (11113), Orange County.

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Mr. Charles Alvarez, Councilman
Gabrieleno Tongva Tribe
23454 Vanowen St.
West Hills, CA 91307

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Mr. Alvarez:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

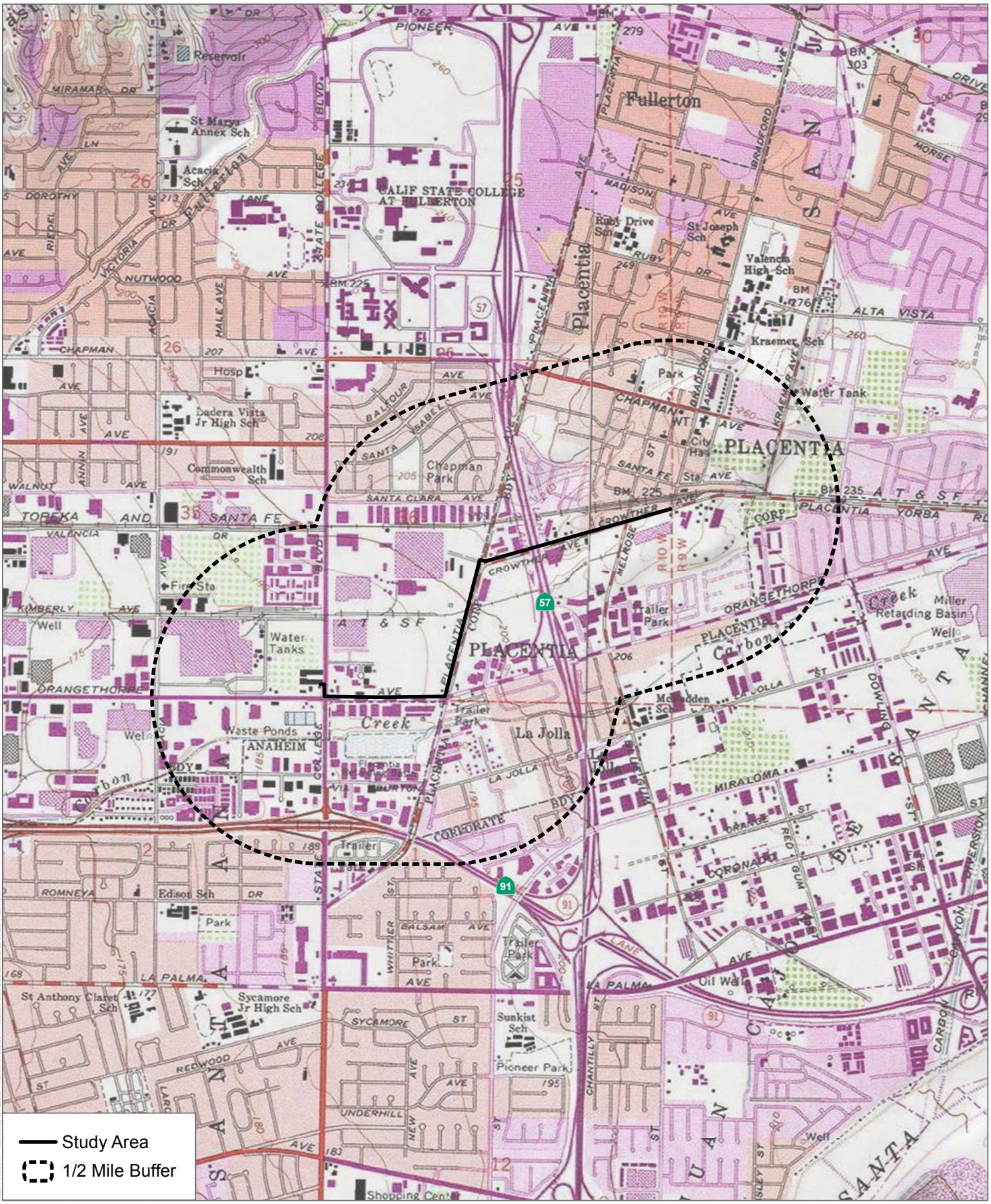
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Mr. Matias Belardes, Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
32161 Avenida Los Amigos
San Juan Capistrano, CA 92675

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Mr. Belardes:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

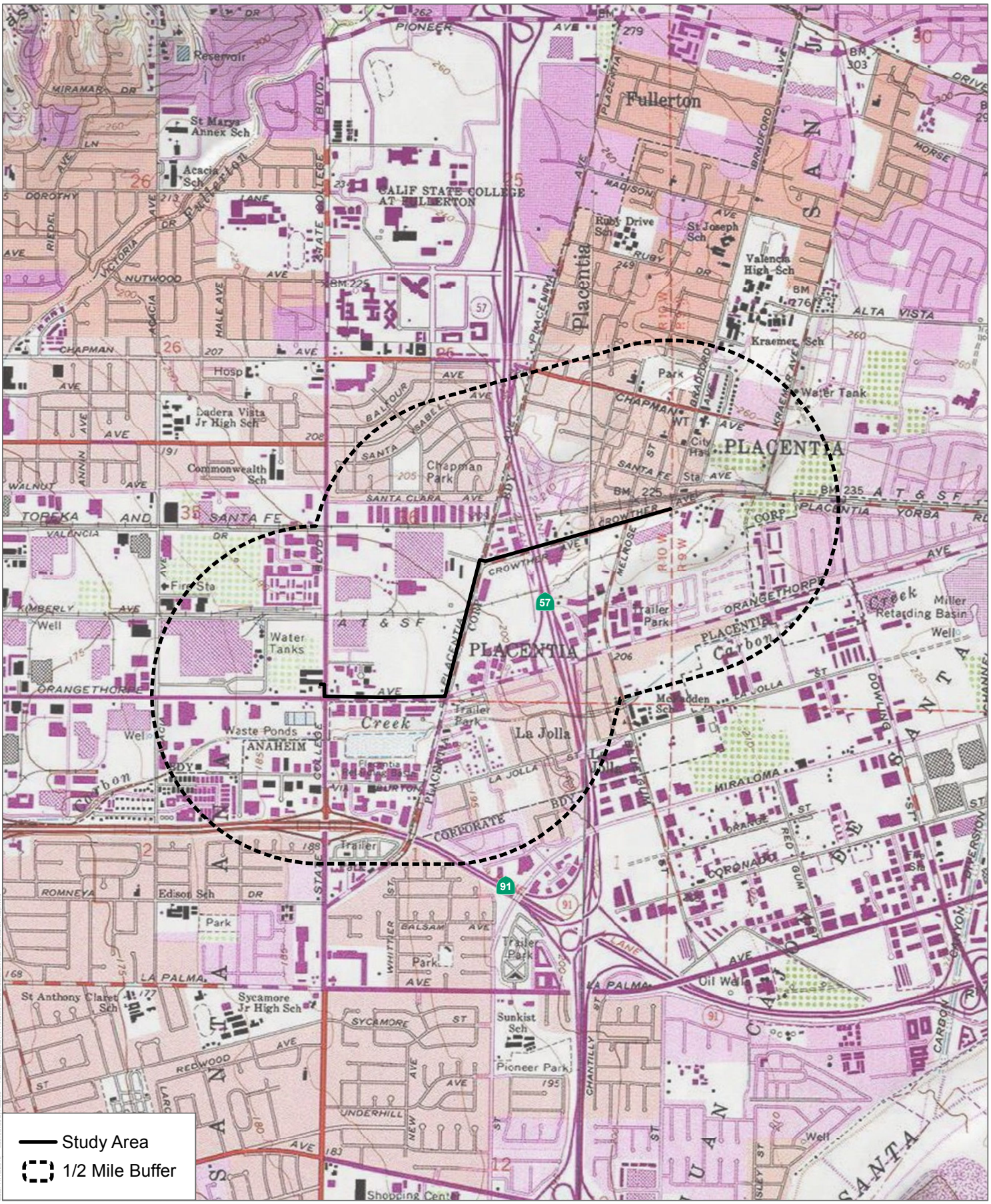
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Ms. Linda Candelaria, Chairperson
Gabrielino Tongva Tribe
80839 Camino Santa Juliana
Indio, CA 92203

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Ms. Candelaria:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

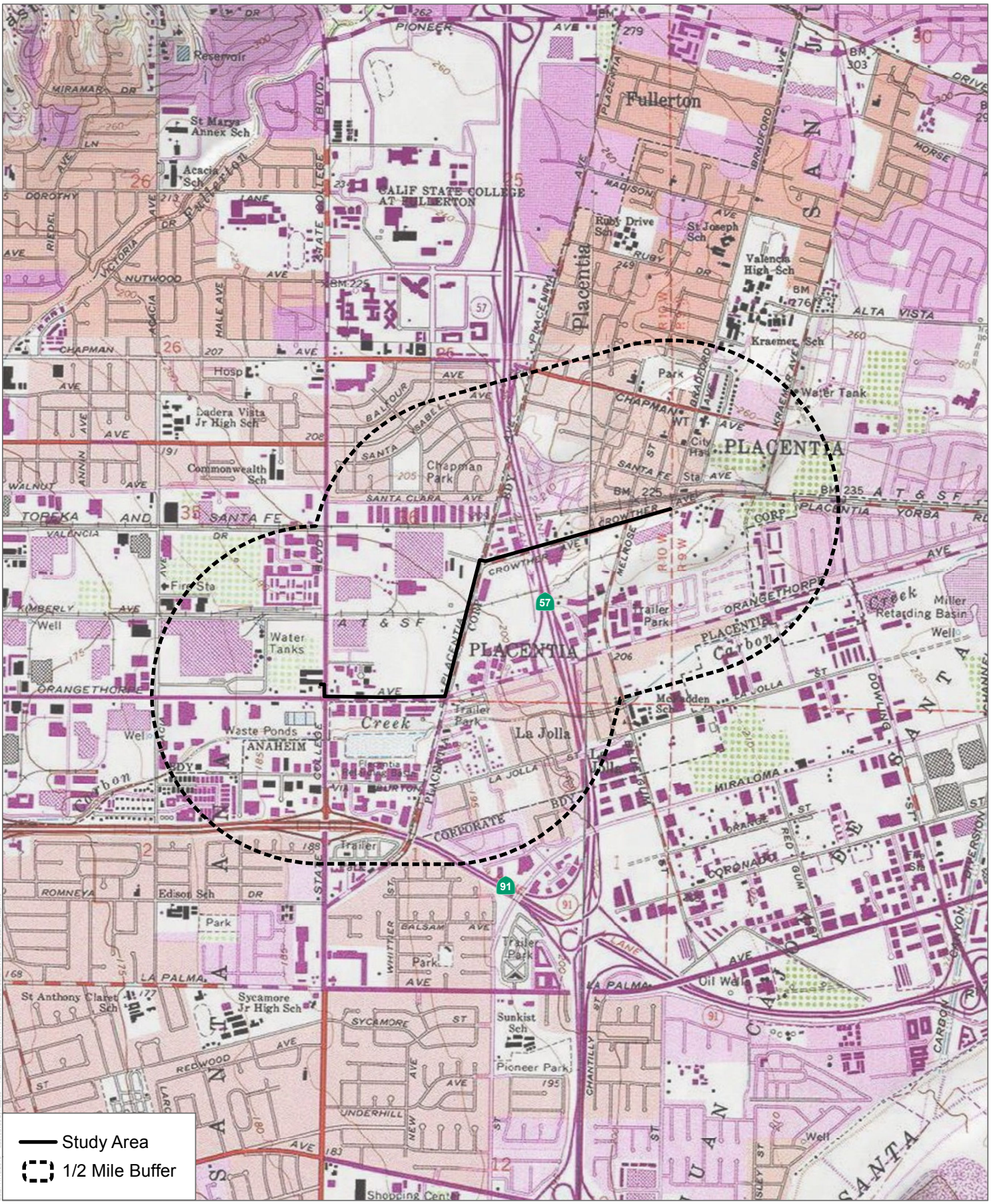
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Mr. Robert F. Dorame, Tribal Chair/Cultural Resources
Gabrielino Tongva Indians of California Tribal Council
P.O. Box 490
Bellflower, CA 90707

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Mr. Dorame:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

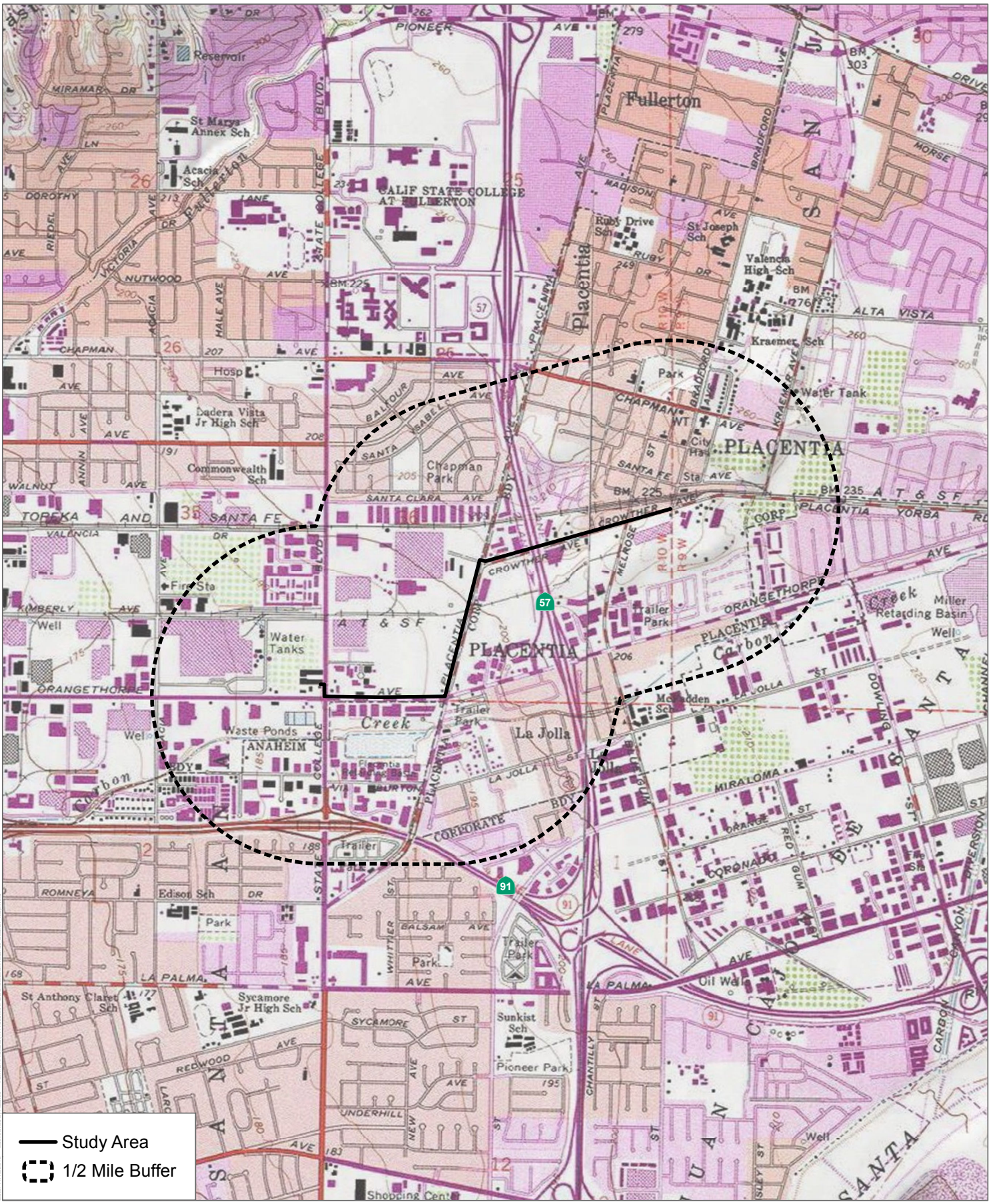
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Ms. Sandonne Goad, Chairperson
Gabrielino-Tongva Nation
106 1/2 Judge John Also St.
Los Angeles, CA 90012

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Ms. Goad:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

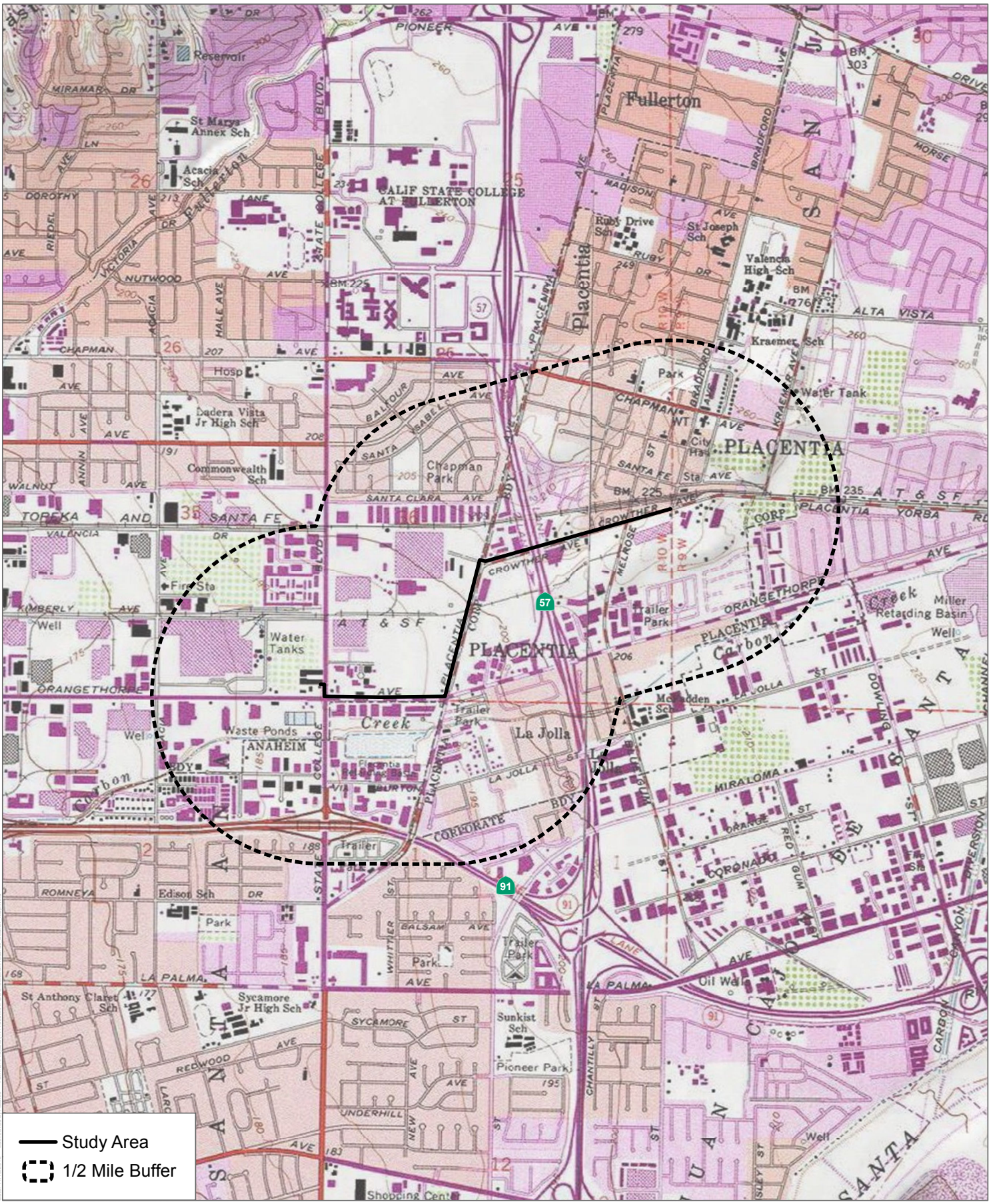
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Ms. Sonia Johnston, Tribal Chairperson
Juaneno Band of Mission Indians
P.O. Box 25628
Santa Ana, CA 92799

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Ms. Johnston:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

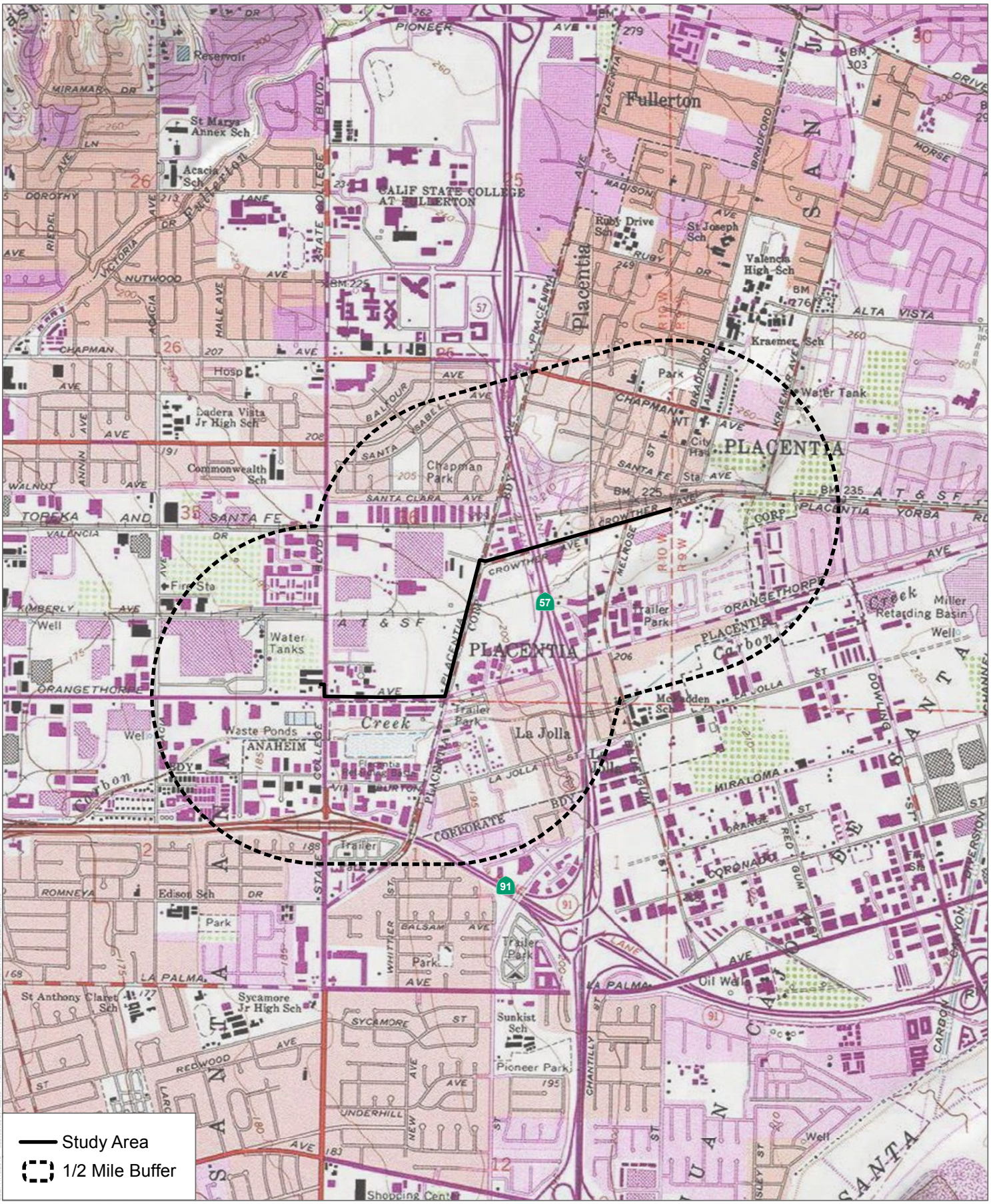
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Mr. Anthony Morales, Chairperson
Gabrieleno/Tongva San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Mr. Morales:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

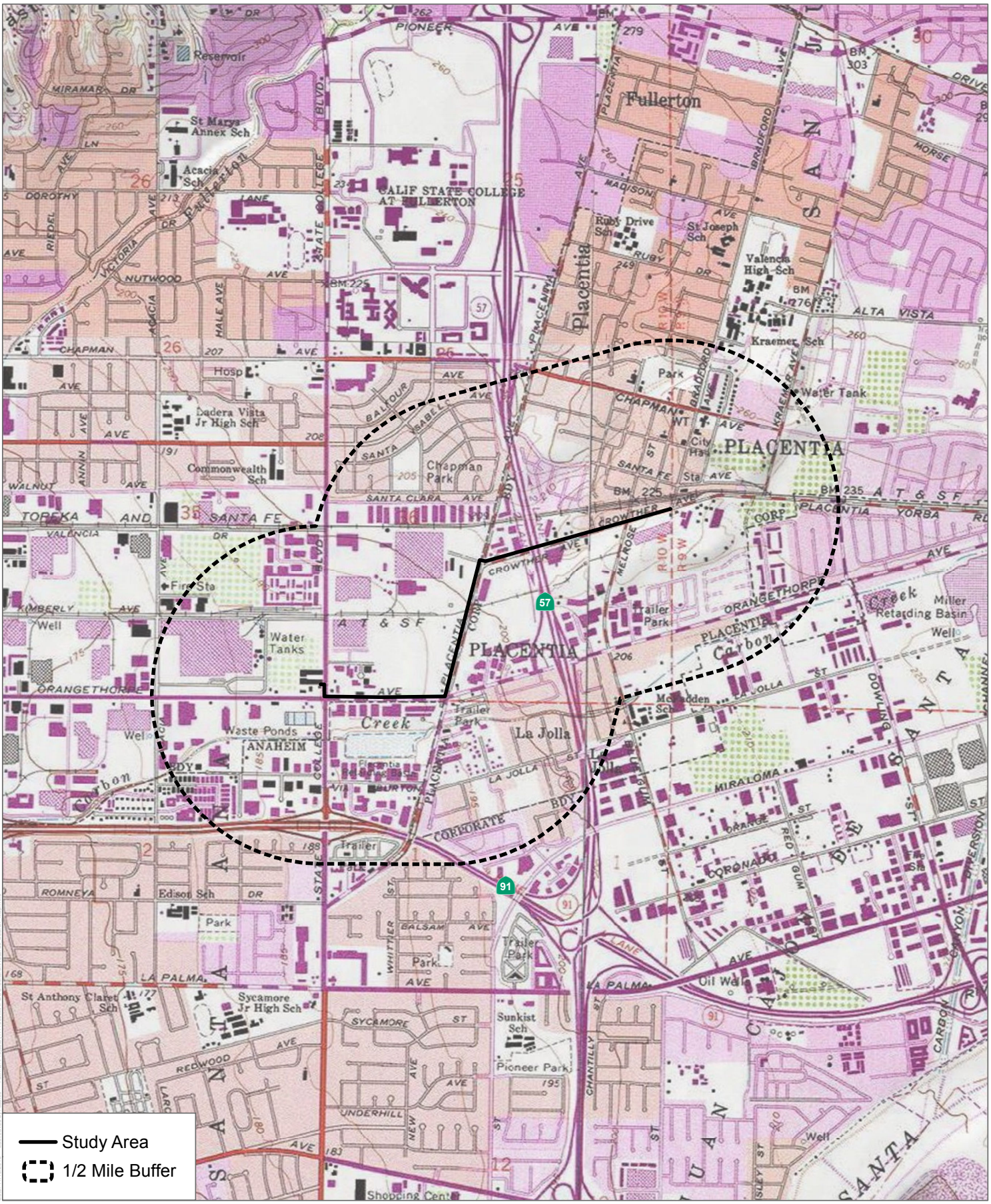
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Ms. Joyce Perry, Representing Tribal Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92612

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Ms. Perry:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

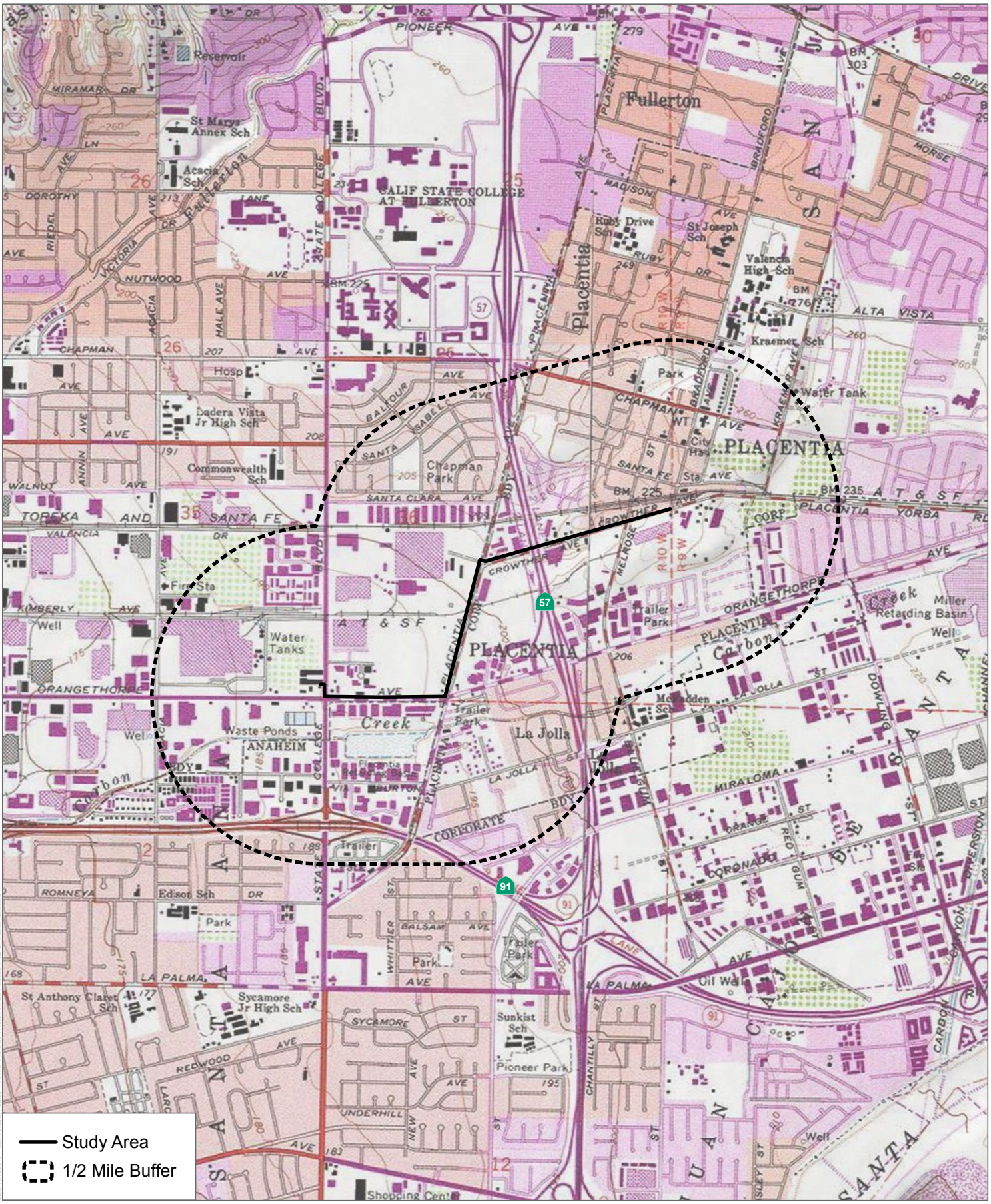
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Ms. Teresa Romero, Chairwoman
Juaneno Band of Mission Indians Acjachemen Nation
31411-A La Matanza Street
San Juan Capistrano, CA 92675

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Ms. Romero:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

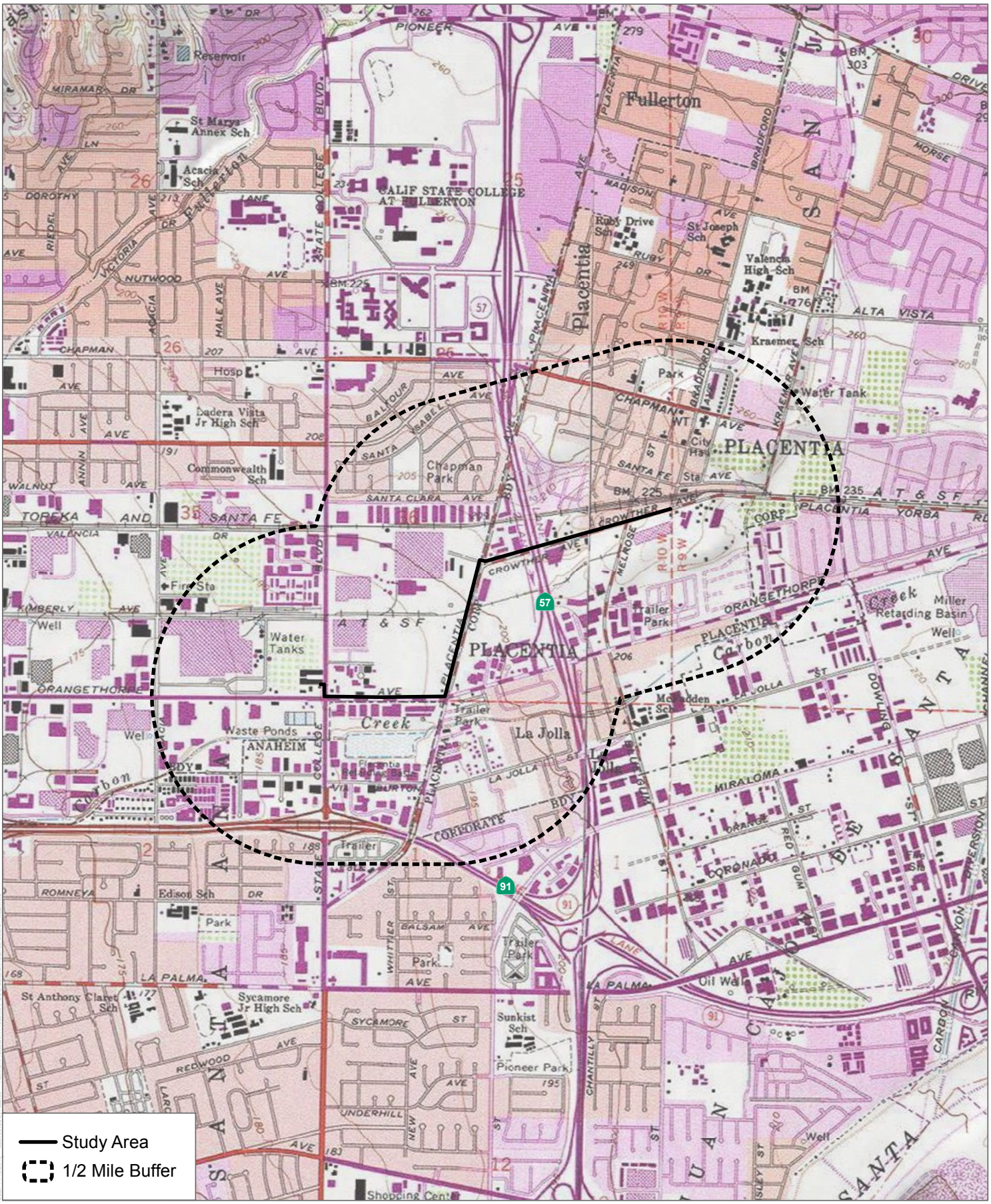
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

DUDEK

38 NORTH MARENGO
PASADENA, CALIFORNIA 91101
T: 626.204.9800

November 16, 2018 11113

Mr. Andrew Salas, Chairperson
Gabrieleno Band of Mission Indians
P.O. Box 393
Covina, CA 91723

Subject: Crowther Pipeline Project, City of Placentia, Orange County, California

Dear Mr. Salas:

Dudek has been retained by the City of Placentia (City) in support of the proposed Crowther Pipeline Project. The City proposes to upsize the existing sewer on Crowther Avenue, Placentia Avenue, and Orangethorpe Avenue, as the proposed Crowther Sewer Pipeline project (proposed project). The proposed project would construct a 15-inch PVC pipe along Crowther Avenue, an 18-inch PVC pipe along Placentia Avenue, and an 18-inch PVC pipe along Orangethorpe Avenue, totaling 7,300 LF. Upon completion, the existing 7,300 LF of 10-inch and 12-inch pipeline will be abandoned in place. Each end of the sewer pipeline between manholes will be plugged and capped. The new collection system would be reconnected to all service laterals and mainlines connections. The project site is within an unsectioned portion of the Public Land Survey System (PLSS) Township 3 South, Range 10 West as shown on the Anaheim, CA United Stated Geologic Survey (USGS) 7.5-minute Quadrangle (Figure 1).

A California Historical Resources Information System (CHRIS) records search was completed at the South Central Coastal Information Center for the project study area and a 0.5-mile radius. Twelve resources have been identified within a 0.5 mile of the project area. All of these resources are built environment resources. One resource, the Placentia Mutual Orange Association Building, at 341 South Melrose Street, borders the project area. This resource has been listed on the Historic Resource Inventory for the City and was determined to be not eligible for the National Register.

Dudek contacted the California Native American Heritage Commission (NAHC) to request a Sacred Lands File (SLF) search and a list of Native American individuals and/or tribal organizations who may have knowledge of cultural resources in or near the proposed project area. The NAHC emailed a response on November 15, 2018, which stated that the SLF search was positive, but did not state whether Native American cultural resources were present within the immediate project area.

The NAHC recommended that we contact you regarding your knowledge of the presence of cultural resources that may be impacted by this project. If you have any knowledge of cultural resources that may exist within or near the proposed project area, please contact me directly at either phone number listed below, enicolay@dudek.com, or at 38 North Marengo Avenue, Pasadena, CA, 91101 within 30 days of receipt of this letter.

Please note that the request herein is for informational purposes only and does not constitute Assembly Bill (AB) 52 notification or initiation of consultation. All information provided will be considered confidential and not shared with the public.

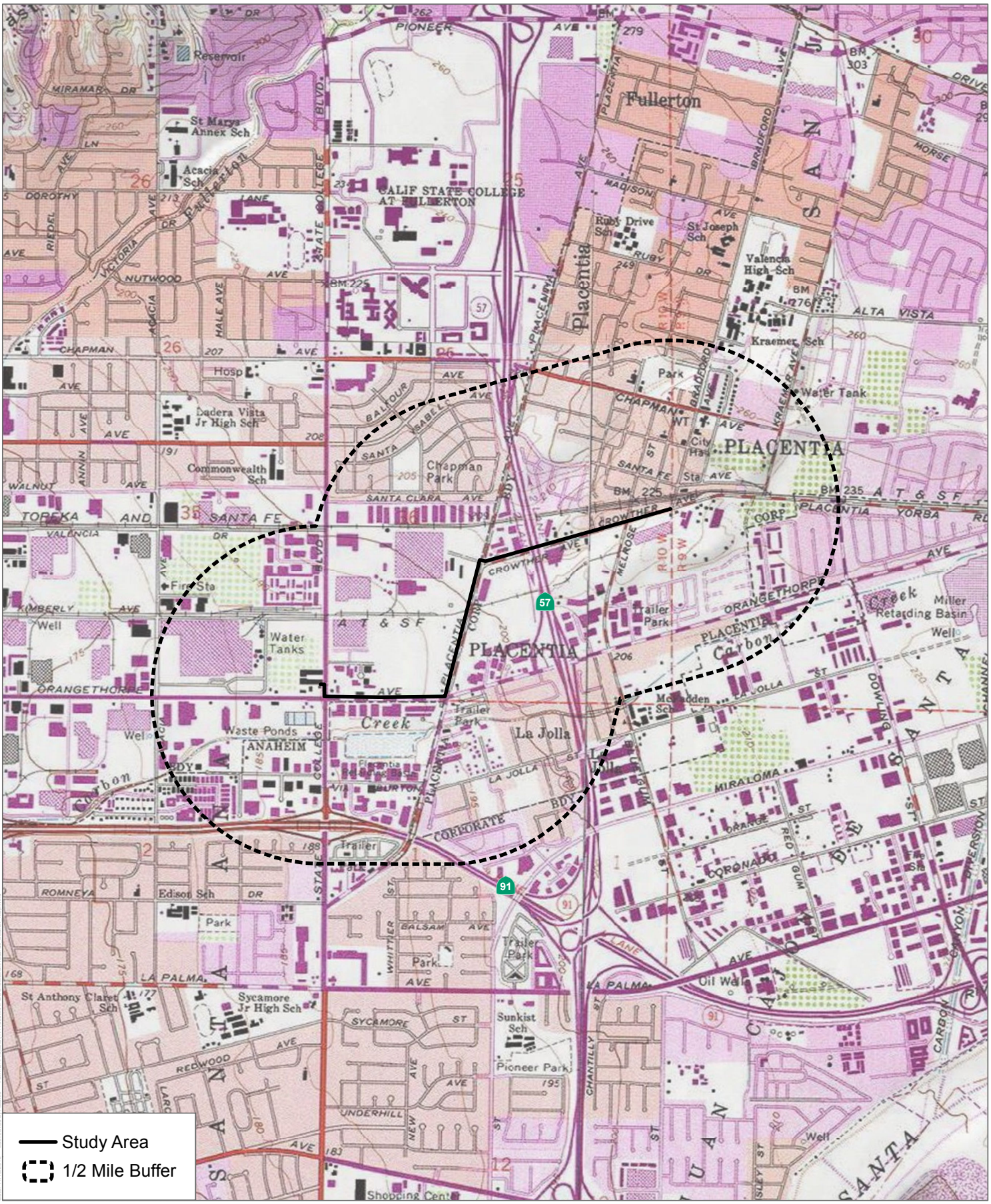
Thank you for your assistance.

Sincerely,

Erica Nicolay, MA
Archaeologist

DUDEK
Office: 626.284.9830
Cell: 760.936.7952

Attachments: Figure 1



SOURCE: USGS 7.5-Minute Series Yorba Linda, Orange, Anaheim Quadrangles
Township 3S, 4S; Range 9W, 10W; Sections 1, 2, 25, 30, 31, 35, 36

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters
1:24,000

Records Search

Crowther Pipeline

Linda Kry

From: Administration Gabrieleno Indians <admin@gabrielenoindians.org>
Sent: Monday, November 26, 2018 11:17 AM
To: Erica Nicolay
Subject: AB52 Consultation request for Crowther Pipeline Project, City of Placentia, Orange County, CA
Attachments: Crowther Pipeline Project, City of Placentia, Orange County, CA-Dudek.pdf; Original Peoples County Map.jpg

Please see attachment

Sincerely,
Admin Specialist
Gabrieleno Band of Mission Indians - Kizh Nation
PO Box 393
Covina, CA 91723
Office: 844-390-0787
website: www.gabrielenoindians.org

GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians /Gabrielino Tribal Council
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

City of Pasadena
38 North Marengo
Pasadena, CA 91101

November 26, 2018

Re: AB52 Consultation request for Crowther Pipeline Project, City of Placentia, Orange County, CA

Dear Erica Nicolay,

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning belonging to or inherited from, which is a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission (NAHC), ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. For this reason, the NAHC will always refer the lead agency to the respective Native American Tribe of the area. The NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and can provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area.

Additionally, CEQA now defines Tribal Cultural Resources (TCRs) as their own independent element separate from archaeological resources. Environmental documents shall now address a separate Tribal Cultural Resource section which includes a thorough analysis of the impacts to only Tribal Cultural Resources (TCRs) and includes independent mitigation measures created with Tribal input during AB-52 consultations. As a result, all mitigation measures, conditions of approval and agreements regarding TCRs (i.e. prehistoric resources) shall be handled solely with the Tribal Government and not through an Environmental/Archaeological firm.

In effort to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 910 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email admin@gabrielenoindians.org to schedule an appointment.

*** Prior to the first consultation with our Tribe, we ask all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view their videos at: http://calepa.ca.gov/Tribal/Training/ or http://nahc.ca.gov/2015/12/ab-52-tribal-training/*

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the Council of Elders
PO Box 393, Covina, CA 91723 | www.gabrielenoindians.org | gabrielenoindians@yahoo.com

Original People of Los Angeles County

Map of territories of Orignal Peoples with county boundaries in Southern California.

ATTACHMENT C

Confidential Assembly Bill 52 Consultation Results

ATTACHMENT D

Confidential CHRIS Records Search Results

APPENDIX D

Geotechnical Investigation

Converse Consultants
Geotechnical Engineering
Environmental & Groundwater Science
Inspection & Testing Services

GEOTECHNICAL INVESTIGATION REPORT

CROWTHER SEWER PIPELINE PROJECT

CITIES OF PLACENTIA AND FULLERTON, ORANGE COUNTY, CALIFORNIA

CONVERSE PROJECT NO. 18-32-102-01

Prepared For:

DUDEK
Ms. Kate Palmer, PE
Senior Engineer
750 Second Street
Encinitas, CA 92024

Presented By:

CONVERSE CONSULTANTS
2021 Rancho Drive, Suite 1
Redlands, CA 92373
909-796-0544

October 19, 2018

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

October 19, 2018

Ms. Kate Palmer, PE
Senior Engineer
DUDEK
750 Second Street
Encinitas, CA 92024

Subject: **GEOTECHNICAL INVESTIGATION REPORT**
Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diameter Pipeline
Cities of Placentia and Fullerton, Orange County, California
Converse Project No. 18-32-102-01

Dear Ms. Palmer:

Converse Consultants (Converse) is pleased to submit this geotechnical investigation report to assist with the design and construction of the Crowther Sewer Pipeline project, located within the Cities of Placentia and Fullerton in Orange County, California. This report was prepared in accordance with our proposal dated January 12, 2018 and Subconsultant Agreement for Professional Services dated September 9, 2018.

Based upon our field investigation, laboratory data, and analyses, the pipeline alignment is considered feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the design and construction of the project.

We appreciate the opportunity to be of service to Dudek. Should you have any questions, please do not hesitate to contact us at 909-796-0544.

CONVERSE CONSULTANTS

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

Dist.: 4/Addressee
HSQ/JB/ZA/kvg

PROFESSIONAL CERTIFICATION

This report has been prepared by the individuals whose seals and signatures appear herein.

The findings, recommendations, specifications, or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering, engineering geologic principles, and practice in this area of Southern California. There is no warranty, either expressed or implied.

Zahangir Alam, PhD, EIT
Senior Staff Engineer

Jay Burnham, PG
Project Geologist

Hashmi S. E. Quazi, PhD, PE, GE
Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions, and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The Crowther Sewer Pipeline project is located within the Cities of Placentia and Fullerton in Orange County, California. This project consists of design and construction of approximately 7,300 linear feet of polyvinyl chloride (PVC) pipeline. The pipe will originate from the intersection of West Crowther Avenue and South Bradford Street. Then, it will traverse west along West Crowther Avenue to the intersection with South Placentia Avenue. Along the way it will cross the Interstate 57 (I-57) freeway and the Orange County Public Works (OCPW) storm drain channel. From the intersection of West Crowther Avenue and South Placentia Avenue, it will travel south to the intersection with East Orangethorpe Avenue. Along the way it will cross the BNSF railway track. Finally, it will travel west along East Orangethorpe Avenue to tie into Orange County Water District's (OCWD) Newhope-Placentia trunk sewer. We understand depth to pipe invert will be within 10 feet below existing ground surface. Open cut-and-cover technique will be utilized to install the pipe, except under the I-57 freeway, BNSF railway track and Orange County Public Work's (OCPW) storm drain channel where bore and jack method will be utilized. The pipe invert will be within 10 feet bgs for BNSF railway track and within 15 feet bgs for I-57 freeway and OCPW's storm drain channel.

- Our scope of work included project set-up, subsurface exploration, laboratory testing, engineering analysis, and preparation of this report.

- Nine exploratory borings (BH-01 through BH-09) were drilled between September 14 and 18, 2018 to investigate the subsurface conditions along the proposed alignment. The borings were drilled to the planned maximum depths of 16.5 and 21.5 feet below existing ground surface (bgs). Borings BH-04 and BH-05 will be on either side of bore and jack pits at BNSF railway track. Borings BH-06 and BH-07 will be on either side of bore and jack pits at I-57 freeway and OCPW's storm drain channel. Existing pavement thicknesses were measured at the boring locations.

- The pavement thickness along W. Crowther Avenue varies from 6.0 to 6.5 inches of asphalt concrete over 6.0 to 10.0 inches of aggregate bas. The pavement thickness along S. Placentia Avenue is 6.0 to 6.5 inches of asphalt concrete over 8.0 to 14.0 inches of aggregate base. The pavement thickness along East Orangethorpe Avenue are 6.0 inches of asphalt concrete over 5.0 to 6.0 inches of concrete. Concrete layer is also observed along West Crowther Avenue and South Placentia Avenue intermittently.

- The subsurface materials are underlain by alluvial soils consisting mixture of sand, silt, clay and gravel. A sandy clay layer was observed in boring BH-06 at depth between 1.0 and 7.5 feet bgs. A sandy silt layer was observed in boring BH-07 at depth between 1.0 and 10.0 feet bgs. Gravel up to 2.0 inches in largest dimension was observed in borings BH-04 through BH-09. Concrete was observed in borings BH-01 through BH-03 and BH-09. Scattered cobbles were observed in boring BH-07. Undocumented fill up to 5 feet bgs was observed in boring BH-04. Though not encountered in any borings (except BH-07), cobbles will likely be present along the West Crowther Avenue segment.

- Groundwater was not encountered to the maximum explored depth of 21.5 feet bgs. Based on the historical data, groundwater was at 70 feet bgs. Dewatering is not expected to be required during the construction of the pipelines. Groundwater level may vary depending upon the seasonal precipitation and possible groundwater pumping activity in the alignment vicinity. Shallow perched groundwater may be present locally, particularly following precipitation.

- The proposed alignment is not located within a currently designated State of California or Orange County Earthquake Fault Zone. There are no known active faults projecting toward or extending across the project alignment. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty but is considered low.

- The potential impact to the project from surface fault rupture, liquefaction, landsliding, lateral spreading, tsunamis, and earthquake-induced flooding is considered to be low.

- The sand equivalents varied from 28 to 49. The results of the R-value tests were 22 and 53.

- The sulfate contents of the sampled soils correspond to American Concrete Institute (ACI) exposure category S0 for these sulfate concentrations. No concrete type restrictions are specified for exposure category S0. A minimum compressive strength of 2,500 psi is recommended. The chloride contents of the sampled soils correspond to American Concrete Institute (ACI) exposure category C1 (concrete is exposed to moisture, but not to external sources of chlorides). For exposure category C1, ACI provides concrete compressive strength of at least 2,500 psi and a maximum chloride content of 0.3 percent.

- The minimum electrical resistivities when saturated ranged from 4,225 to 14,730 ohm-cm. These values indicate that the tested soils are moderately corrosive to mildly corrosive to ferrous metals in contact with the soil. Converse does not practice in the area of corrosion consulting. A qualified corrosion consultant should provide appropriate corrosion mitigation measures for any ferrous metals in contact with the alignment soils.

- Prior to the start of construction, all existing underground utilities should be located along the pipeline alignment. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications. Deleterious material, including organics, concrete, and debris generated during excavation, should not be placed as fill.

- The subsurface materials along the pipeline alignment are expected to be excavatable by conventional heavy-duty earth moving and trenching equipment. Excavation will be difficult throughout the whole alignment including bore and jack locations due to the presence of gravel, concrete and possible cobbles.

- Earthwork for the project includes pipe trench excavation, pipe subgrade preparation, backfilling of the trench following the placement of the pipe and backfilling of bore-and-jack pits. Excavated soils free of particles larger than 3 inches and deleterious matter may be used for backfilling. The backfill materials should be brought to within ± 3 percent of optimum moisture content for coarse-grained soil and between optimum and 2 percent above optimum for fine-grained soil. All backfill should be compacted to at least 90 percent and the upper 12 inches of subgrade soils underneath pavements intended to support vehicle loads should be scarified, moisture conditioned, and compacted to at least 95 percent of the laboratory maximum dry density.

- The bore-and-jack pit bottoms should be free of trash, debris or other unsatisfactory materials at the time of backfill placement. The bottoms of the excavations should be scarified to a minimum depth of 12 inches below subgrade, moisture conditioned to within 3 percent of optimum moisture content, and recompacted to at least 90 percent of the laboratory maximum dry density. The backfill soils should be well-blended and moisture conditioned to within 3 percent of optimum moisture content. The backfill should be placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 90 percent of the laboratory maximum dry density per ASTM Standard D1557. If the ground surface is to be paved, the backfill within 12 inches of the pavement subgrade should be compacted to at least 95 percent of the laboratory maximum dry density.

- Allowable net bearing capacities, lateral earth pressures, and pipeline design parameters are presented in the text of this report.

- Recommendations for jacking force are provided in the text of this report.

- Pavement design recommendations are presented in the text of this report.

- Slope ratios for temporary excavations and shoring recommendations are also provided in the text of this report.

Based on our investigation, it is our professional opinion that the proposed alignment is suitable for construction of the pipeline, provided the findings and conclusions presented in this geotechnical investigation report are considered in the planning, design and construction of the project.

TABLE OF CONTENTS

FIGURES

Following Page No.

TABLES

Page No.

APPENDICES

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation performed for the Crowther Sewer Pipeline project, located within the Cities of Placentia and Fullerton in Orange County, California. The pipeline alignment is shown in Figure No. 1, *Approximate Alignment Location Map*.

The purpose of this investigation was to determine the nature and engineering properties of the subsurface soils, and to provide design and construction recommendations for the sewer pipeline.

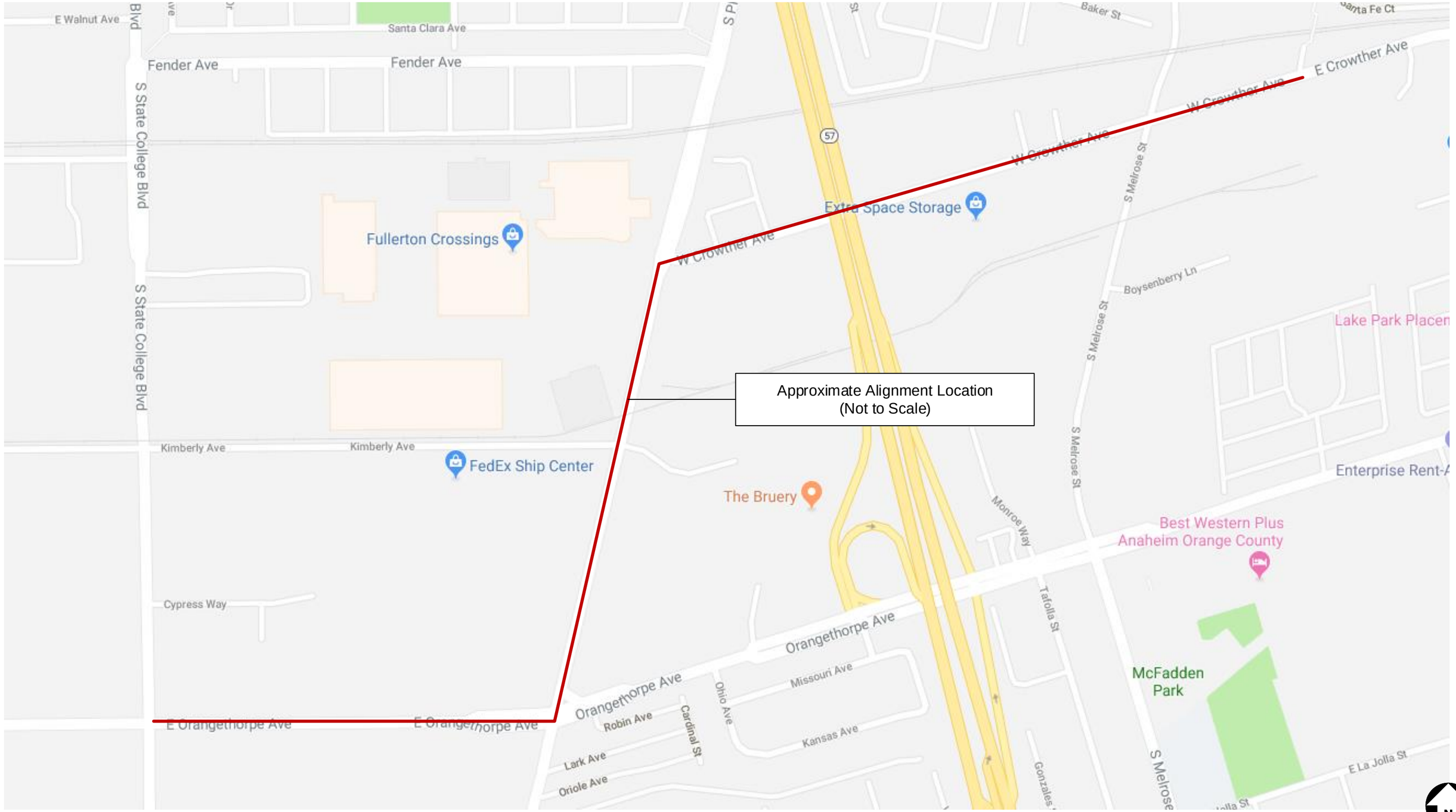
This report is prepared for the project described herein and is intended for use solely by Dudek and their authorized agents for design purposes. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

2.0 PROJECT DESCRIPTION

This project consists of design and construction of approximately 7,300 linear feet of polyvinyl chloride (PVC) pipeline. The pipe will convey future flows from the TOD Zone to the Orange County Sanitation District (OCSD) outfall trunk at South State College Boulevard and East Orangethorpe Avenue. The pipe will originate from the intersection of West Crowther Avenue and South Bradford Street. Then, it will traverse west along West Crowther Avenue to the intersection with South Placentia Avenue. Along the way it will cross the Interstate 57 (I-57) freeway and the Orange County Public Works (OCPW) storm drain channel. From the intersection of West Crowther Avenue and South Placentia Avenue, it will travel south to the intersection with East Orangethorpe Avenue. Along the way it will cross the BNSF railway track. Finally, it will travel west along East Orangethorpe Avenue to tie into Orange County Water District's (OCWD) Newhope-Placentia trunk sewer. The details of the pipeline are presented in the following table.

Table No 1, Sewer Pipeline Details

Location	From	To	Approx. Length (feet)	Diameter (inch)
W. Crowther Ave.	Bradford St.	W. Crowther Ave.	3,200	15
S. Placentia Ave.	W. Crowther Ave.	E. Orangethorpe Ave.	2,200	18
E. Orangethorpe Ave.	S. Placentia Ave.	S. State College Blvd.	1,900	18



Project: Crowther Sewer Pipeline Project
Location: Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Approximate Alignment Location Map

Project No.
18-32-102-01

Converse Consultants

Figure No.
1

We understand depth to pipe invert will be within 10 feet below existing ground surface. Open cut-and-cover technique will be utilized to install the pipe, except under the I-57 freeway, BNSF railway track and OCPW's storm drain channel where bore and jack method will be utilized. The pipe invert will be within 10 feet bgs for BNSF railway track and within 15 feet bgs for I-57 freeway and OCPW's storm drain channel.

3.0 SCOPE OF WORK

The scope of this investigation included existing document review, project set-up, subsurface exploration, laboratory testing, engineering analysis, and preparation of this report, as described in the following sections.

3.1 Document Review

We used pertinent information to understand the subsurface conditions and plan the investigation for this project.

We also reviewed geohazard and groundwater maps to evaluate any impact on the design and construction of the proposed pipeline.

3.2 Project Set-up

As part of the project setup, we conducted the following.

- Prepared and submitted a geotechnical exploration plan for your review and approval.
- Obtain drilling permits from the Cities of Placentia and Fullerton.
- Conducted an alignment reconnaissance and marked the borings so that drill rig access to all the locations was available.
- Prepared traffic control diagrams in accordance with MUTCD and WATCH manual.
- Notified Underground Service Alert (USA) at least 48 hours prior to the investigation to clear the locations of any conflict with existing underground utilities.
- Engaged a California-licensed driller to drill exploratory borings.

3.3 Subsurface Exploration

Nine exploratory borings (BH-01 through BH-09) were drilled between September 14 and 18, 2018 to investigate the subsurface conditions along the proposed alignment. The borings were drilled to the planned maximum depths of 16.5 and 21.5 feet below existing ground surface (bgs). Borings BH-04 and BH-05 will be on either side of bore and jack pits at BNSF railway track. Borings BH-06 and BH-07 will be on either side of bore and jack pits at I-57 freeway and OCPW's storm drain channel. Existing pavement thicknesses were measured at the boring locations.

Approximate boring locations are indicated in Figures No. 2a through 2d, *Approximate Boring Locations Map*. For a description of the field exploration and sampling program see Appendix A, *Field Exploration*.

3.4 Laboratory Testing

Representative samples of the alignment soils were tested in the laboratory to aid in the soils classification and to evaluate the relevant engineering properties of the alignment soils. These tests included the following.

- *In-situ* Moisture Contents and Dry Densities (ASTM D2216/D7263)
- Sand Equivalent (ASTM D2419)
- R-Value (California Test CT301)
- Soil Corrosivity Tests (California Tests 643, 422, and 417)
- Grain Size Distribution (ASTM C136)
- Maximum Dry Density and Optimum-Moisture Content (ASTM D1557)
- Direct Shear (ASTM D3080)

For *in-situ* moisture and dry density data, see the Logs of Borings in Appendix A, *Field Exploration*. For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program.*

3.5 Analysis and Report Preparation

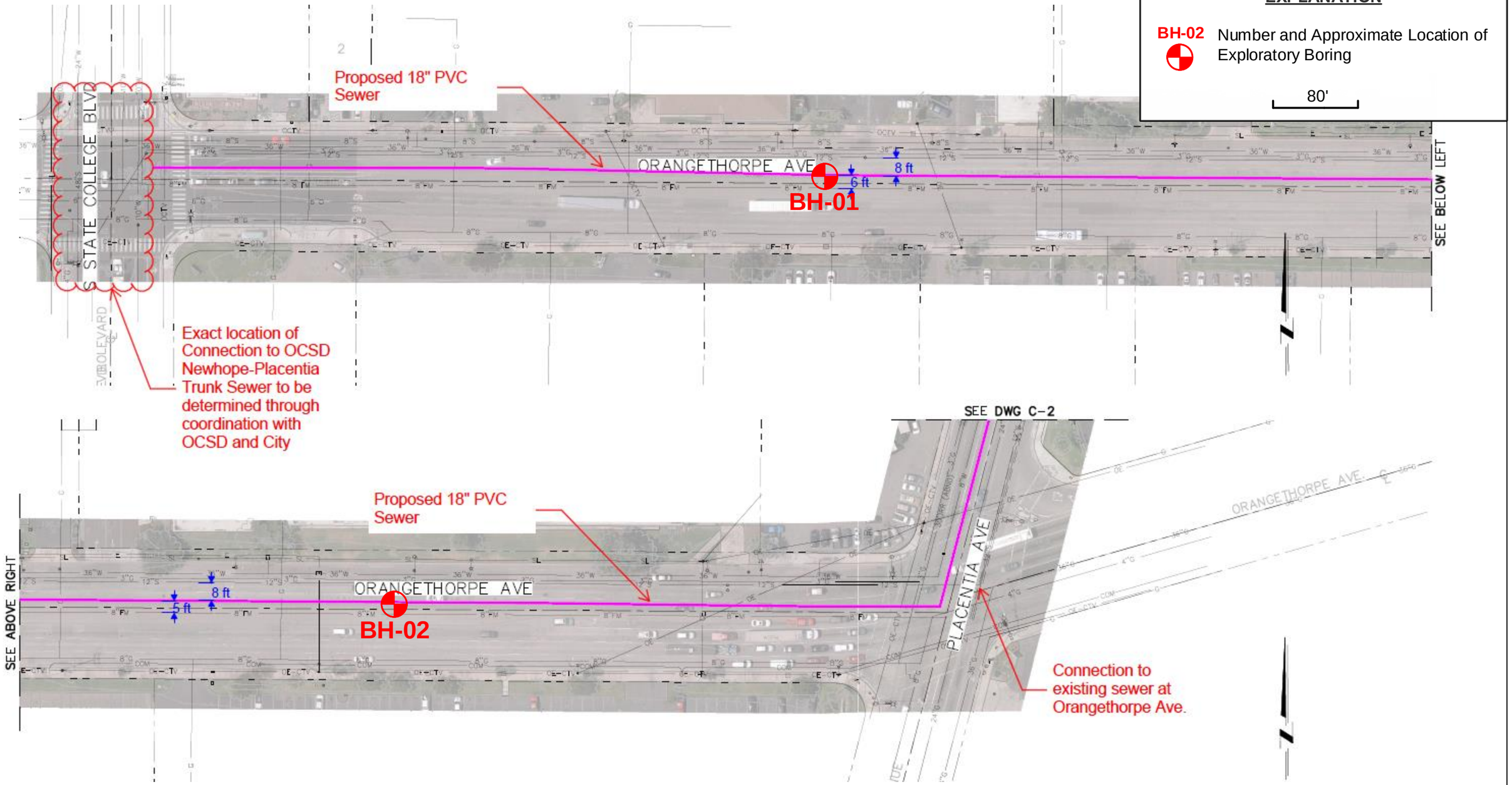
Data obtained from the field exploration and laboratory testing program were compiled and evaluated. Geotechnical analyses of the compiled data were performed and this report was prepared to present our findings, conclusions and recommendations for the proposed sewer pipeline.

4.0 ALIGNMENT CONDITIONS

Present street conditions are described below.

W. Crowther Ave., S. Bradford St. to S. Placentia Ave.

- Collector street
- Two lanes in each direction with shoulders and median.
- Overhead utilities on south side of the street.
- The street is bounded by vacant land and commercial developments.
- Moderate traffic was observed mid-day.
- Crosses under the Interstate 57 freeway and OCPW's storm drain channel.
- Photograph No. 1 depicts the present street conditions.



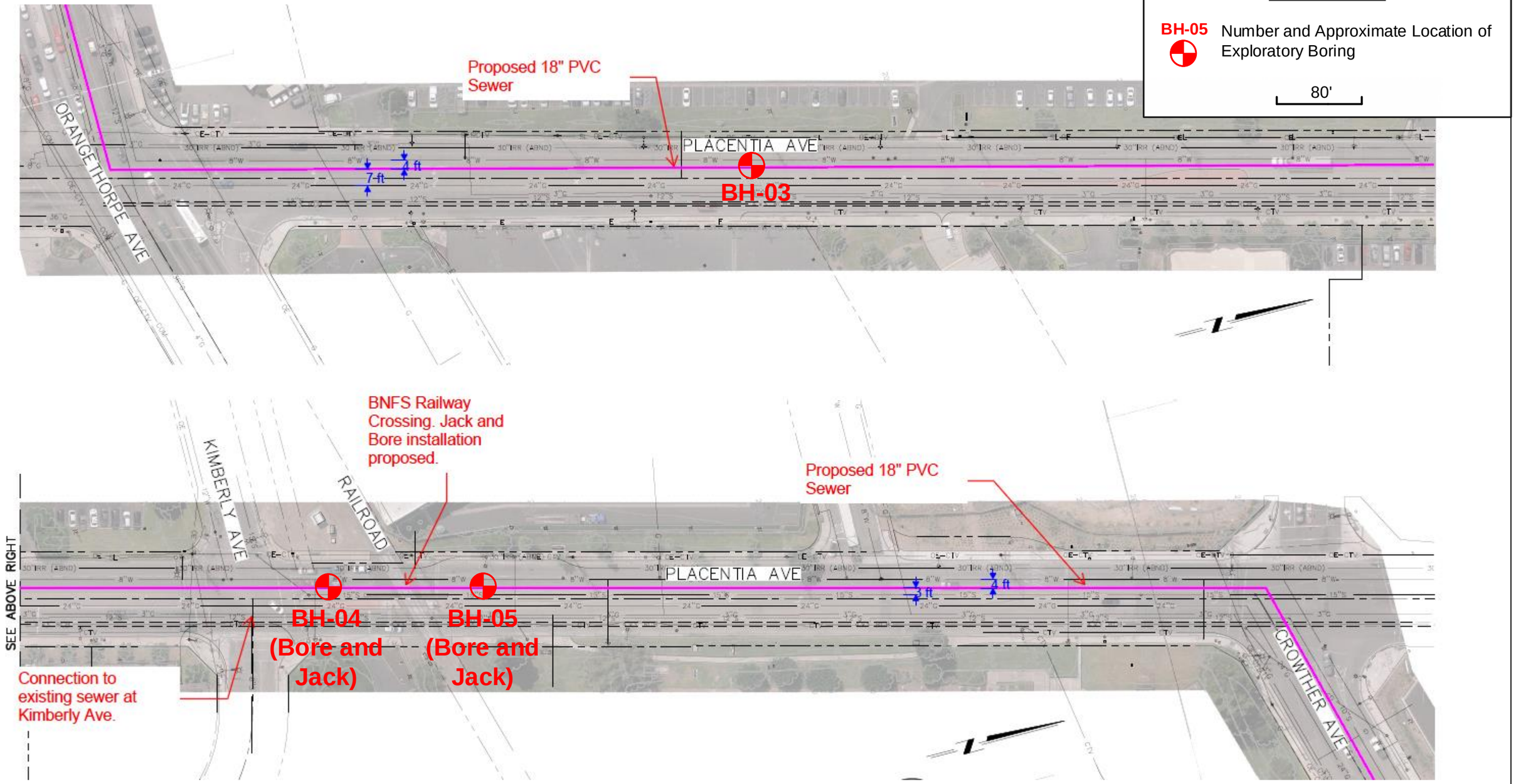
Approximate Boring Locations Map

Project: Crowther Sewer Pipeline Project
Location: Along W. Crowther Ave., S. Placentia Ave, and E. Orangethorpe Ave
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No.
18-32-102-01

Converse Consultants

Figure No.
2a



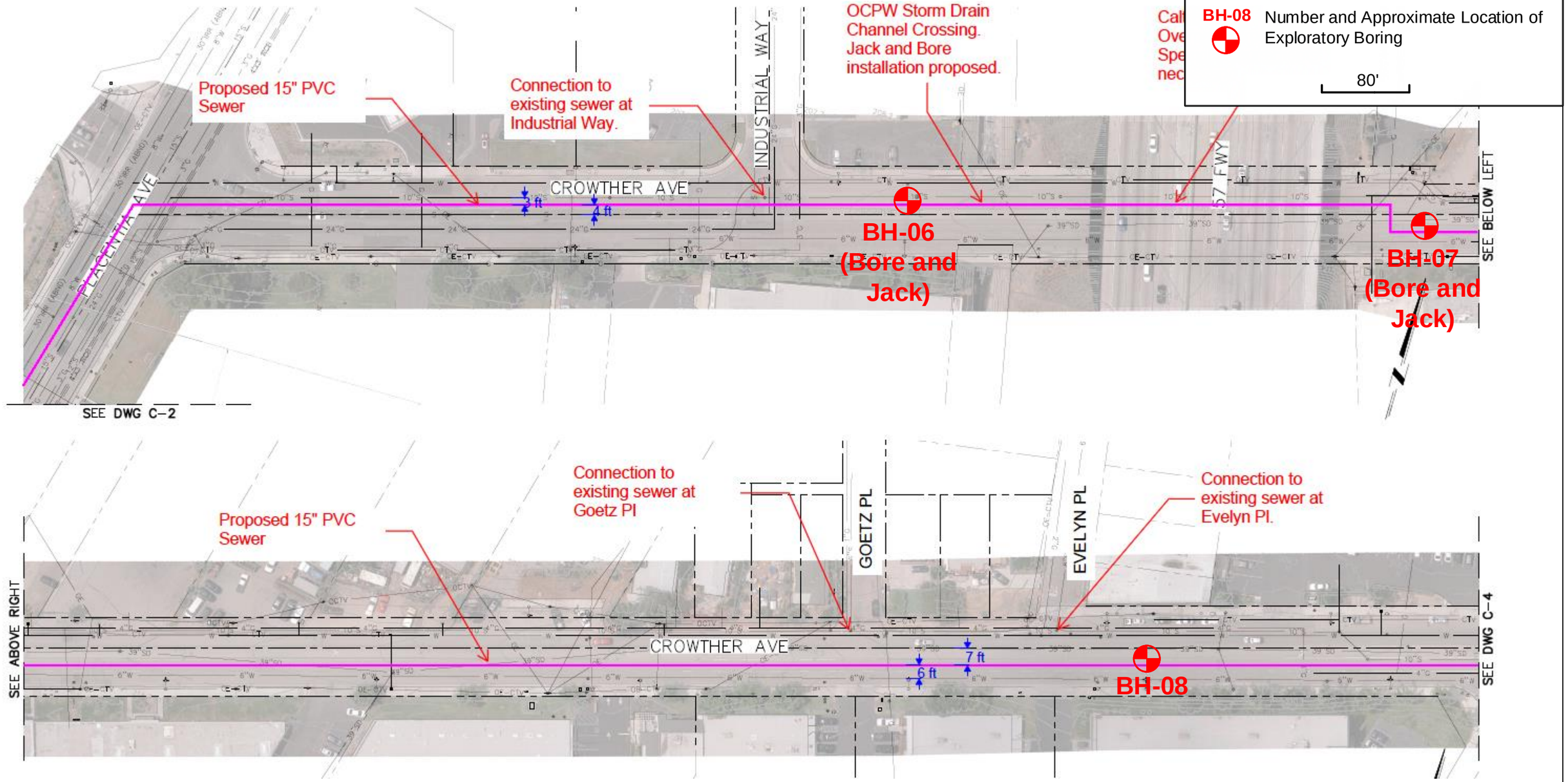
Approximate Boring Locations Map

Project: Crowther Sewer Pipeline Project
Location: Along W. Crowther Ave., S. Placentia Ave, and E. Orangethorpe Ave
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No.
18-32-102-01

Converse Consultants

Figure No.
2b



Approximate Boring Locations Map

Project: Crowther Sewer Pipeline Project
Location: Along W. Crowther Ave., S. Placentia Ave, and E. Orangethorpe Ave
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No.
18-32-102-01

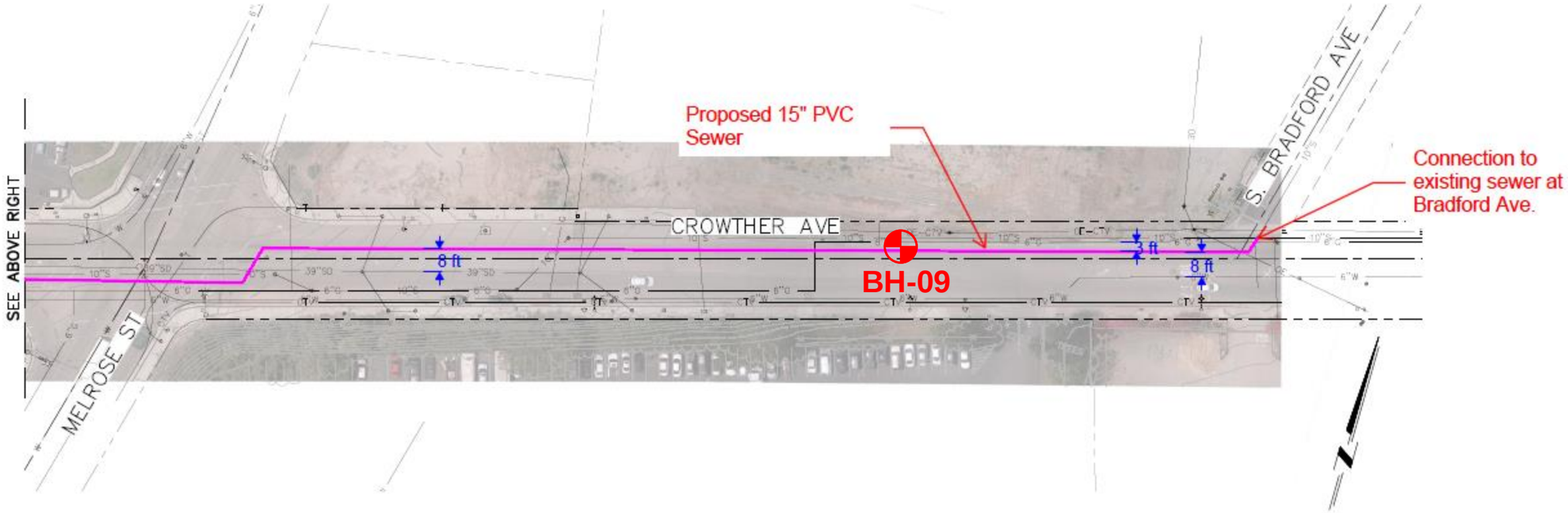
Converse Consultants

Figure No.
2c

EXPLANATION

BH-09 Number and Approximate Location of Exploratory Boring

80'



Approximate Boring Location Map

Project: Crowther Sewer Pipeline Project
Location: Along W. Crowther Ave., S. Placentia Ave, and E. Orangethorpe Ave
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No.
18-32-102-01

Converse Consultants

Figure No.
2d

S. Placentia Ave., W. Crowther Ave. to E. Orangethorpe Ave.

- Collector street
- Two lanes in each direction with shoulders and median.
- Overhead utilities on west side of the street.
- The street is bounded by vacant land and commercial developments.
- Moderate to high traffic was observed mid-day.
- Crosses a BNSF railway track.
- Photograph No. 2 depicts the present street conditions.

E. Orangethorpe Ave., S. Placentia Ave and OCSD's Trunk Sewer.

- Arterial street
- Three lanes in each direction with shoulders and median.
- Overhead utilities on south side of the street.
- The street is bounded by vacant land and commercial developments.
- Moderate traffic was observed mid-day.
- Photograph No. 3 depicts the present street conditions.

Photograph No. 1: West Crowther Avenue crossing I-57

Photograph No. 2: South Placentia Avenue crossing BNSF railway track

Photograph No. 3: East Orangethorpe Avenue facing west

4.1 Existing Pavement Sections

The measured pavement thicknesses are included in the following table.

Table No. 2, Existing Pavement Sections

Boring No.	Street	Asphalt Concrete Thickness (in.)	Aggregate Base Thickness (in.)	Concrete Thickness (in.)
BH-01	E. Orangethorpe Ave.	6.0	N/A	5.0
BH-02	E. Orangethorpe Ave.	6.0	N/A	6.0
BH-03	S. Placentia Ave.	6.5	N/A	6.0
BH-04	S. Placentia Ave.	6.0	8.0	N/A
BH-05	S. Placentia Ave.	6.0	14.0	N/A
BH-06	W. Crowther Ave.	6.5	8.0	N/A
BH-07	W. Crowther Ave.	6.0	10.0	N/A
BH-08	W. Crowther Ave.	6.0	6.0	N/A
BH-09	W. Crowther Ave.	6.0	10.0	6.0

(For borings locations, see Figures No, 2a through 2d; N/A = not applicable))

For a detailed description of the subsurface materials encountered in the exploratory borings, see Drawings No. A-2 through A-10, *Logs of Borings,* in Appendix A, *Field Exploration.*

4.2 Subsurface Profile

Based on the exploratory borings and laboratory test results, the subsurface materials are underlain by alluvial soils consisting mixture of sand, silt, clay and gravel. A sandy clay layer was observed in boring BH-06 at depth between 1.0 and 7.5 feet bgs. A sandy silt layer was observed in boring BH-07 at depth between 1.0 and 10.0 feet bgs. Gravel up to 2.0 inches in largest dimension was observed in borings BH-04 through BH-09. Concrete base was observed in borings BH-01 through BH-03 and BH-09. Scattered cobbles were observed in boring BH-07. Undocumented fill up to 5 feet bgs was observed in boring BH-04. Though not encountered in any borings (except BH-07), cobbles will likely be present along the West Crowther Avenue segment.

For a detailed description of the subsurface materials encountered in the exploratory borings, see Drawings No. A-2 through A-10, *Logs of Borings,* in Appendix A, *Field Exploration.*

4.3 Groundwater

Groundwater was not encountered to the maximum explored depth of 21.5 feet bgs. Regional databases were reviewed to estimate expected groundwater conditions in the

vicinity of the proposed alignment. The following data was found on the GeoTracker website (SWRCB, 2018). Due to the number of sites, only the sites with data closest to the alignment were included.

- M & J EQUIPMENT (Site No. T0605900174), located approximately 600 feet north of the Placentia and Crowther segments intersection, reported groundwater at a depth of 120 feet bgs in 1986.

- PLACENTIA REPAIRS (U-HAUL) (Site No. T0605901529), located approximately 150 feet northwest of the intersection of the Placentia and Orangethorpe segments, reported groundwater at a depth of 100 feet bgs in 2005.

- SANTA FE COURTYARDS (Site No. T0605996863), located approximately 650 feet northeast of the Crowther segment, reported groundwater at depths ranging from 86 to 91 feet bgs in 2006.

- ULTRAMAR #3749 (Site No. T0605901065), located approximately 100 feet southeast of the intersection of the Placentia and Orangethorpe segments, reported groundwater at depths ranging from 81 to 119 feet bgs in 2001.

- O.C.T.D. ANAHEIM DIVISION (Site No. T0605900993), located approximately 850 feet southwest of the Orangethorpe segment, reported groundwater at depths ranging from 75 to 85 feet bgs in 1998.

- ARCO #0097 (Site No. T0605900036), located approximately 2,300 feet northwest of the Crowther segment, reported groundwater at a depth of 70 feet bgs in 1996.

Data in the following table was found on the National Water Information System (USGS, 2018a).

Table No. 3, Summary of USGS Groundwater Depth Data

Site No.	Location	Groundwater Depth Range (ft. bgs)	Date Range
335146117512101	S/E of East Orangethorpe Ave. and North Kraemer Blvd.	72.8-168.9	1972-1986
335234117512101	S/W of Alta Vista St. and Lyons Way	85.7	1977
335056117524701	N/W of East Sandalwood Ct. and East Miraloma Ave.	112.4-180.3	1974-1980

Historical high groundwater level in the vicinity of the alignment was 70 feet bgs. Currently, groundwater levels are deeper than 21.5 feet bgs. Dewatering is not expected to be required during the construction of the pipeline. It should be noted that the groundwater level could vary depending upon the seasonal precipitation and

possible groundwater pumping activity in the site vicinity. Shallow perched groundwater may be present locally, particularly following precipitation.

4.4 Excavatability

The subsurface materials along the pipeline alignment are expected to be excavatable by conventional heavy-duty earth moving and trenching equipment. Excavation will be difficult throughout the whole alignment including bore and jack locations due to the presence of gravel, concrete base and possible cobbles.

The phrase “conventional heavy-duty excavation equipment” is intended to include commonly used equipment such as excavators, scrapers, and trenching machines. It does not include hydraulic hammers (“breakers”), jackhammers, blasting, or other specialized equipment and techniques used to excavate hard earth materials. Selection of appropriate excavation equipment models should be done by an experienced earthwork contractor.

4.5 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the proposed alignment should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations.

5.0 ENGINEERING GEOLOGY

The regional and local geology within the proposed alignment are discussed below.

5.1 Regional Geology

The project site is located within the northern Peninsular Ranges Geomorphic Province of Southern California. The Peninsular Ranges Geomorphic Province consists of a series of northwest-trending mountain ranges and valleys bounded on the north by the San Bernardino and San Gabriel Mountains, on the west by the Los Angeles Basin, and on the south by the Pacific Ocean.

The province is a seismically active region characterized by a series of northwest-trending strike-slip faults. The most prominent of the nearby fault zones include the Whittier, Elsinore, and San Andreas Fault Zones, all of which have been known to be active during Quaternary time.

Topography within the province is generally characterized by broad alluvial valleys separated by linear mountain ranges. This northwest-trending linear fabric is created by the regional faulting within the granitic basement rock of the Southern California

Batholith. Broad, linear, alluvial valleys have been formed by erosion of these principally granitic mountain ranges.

The site is located within the southeastern portion of the Los Angeles Basin, southwest of where the Santa Ana Mountains and Chino Hills meet along the Santa Ana River channel. The site is located approximately 1.9 miles northwest of the active Santa Ana River channel.

5.2 Local Geology

Based on review of the available geologic mapping (Morton and Miller, 2006), the Orangethorpe and Placentia segments approximately up to the BH-06 location are underlain by young (Holocene and late Pleistocene) aged alluvial fan sediments deposited by the Santa Ana River. The deposits primarily consist of unconsolidated to moderately consolidated mixtures of silt, sand, gravel, cobbles, and boulders. The Crowther segment from BH-06 to the end of the alignment, it is underlain by very old (middle to early Pleistocene-aged) alluvial sediments. These deposits consist of moderately to well consolidated silt, sand, gravel and conglomerate.

6.0 FAULTING AND SEISMICITY

The location of the faults with respect to the alignment and its impact is discussed in the following sections.

6.1 Faulting

The proposed alignment is not located within a currently designated State of California or Orange County Earthquake Fault Zone (CGS, 1998; Orange County, 2015a). There are no known active faults projecting toward or extending across the project alignment. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty but is considered low.

The proposed alignment is situated in a seismically active region. As is the case for most areas of Southern California, ground shaking resulting from earthquakes associated with nearby and more distant faults may occur at the proposed alignment. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the alignment.

The following table contains a list of active and potentially active faults within 100 kilometers of the subject alignment’s generalized center. The fault parameters and distances presented in the following table are based on the output from EQFAULT (Blake, 2000), revised in accordance with CGS fault parameters (Cao et. al., 2003). The fault distances are shown from the generalized center of the project alignment, which is approximately 1.2 miles long.

Table No. 4, Seismic Characteristics of Nearby Active Faults

Fault Name	Approximate Distance (miles (km))	Moment Magnitude (Mw)
Whittier	5.2 (8.3)	6.8
Elysian Park Thrust	6.6 (10.7)	6.7
Compton Thrust	9.4 (15.2)	6.8
Chino-Central Ave. (Elsinore)	11.9 (19.2)	6.7
San Jose	12.7 (20.4)	6.4
Elsinore-Glen Ivy	14.2 (22.8)	6.8
Newport-Inglewood (L.A. Basin)	14.2 (22.9)	7.1
Newport-Inglewood (Offshore)	19.0 (30.6)	7.1
Sierra Madre	20.9 (33.6)	7.2
Cucamonga	21.4 (34.5)	6.9
Raymond	22.4 (36.1)	6.5
Palos Verdes	23.1 (37.1)	7.3
Clamshell-Sawpit	24.5 (39.5)	6.5
Verdugo	24.9 (40.0)	6.9
Hollywood	27.2 (43.8)	6.4
San Jacinto-San Bernardino	33.7 (54.3)	6.7
Santa Monica	34.2 (55.1)	6.6
Elsinore-Temecula	34.3 (55.2)	6.8
San Andreas-Mojave	36.7 (59.1)	7.4
San Andreas-Southern	36.8 (59.2)	7.5
San Andreas-San Bernardino	36.8 (59.2)	7.5
San Jacinto-San Jacinto Valley	38.5 (62.0)	6.9
Sierra Madre (San Fernando)	38.6 (62.2)	6.7
San Gabriel	38.8 (62.5)	7.2
Cleghorn	39.1 (63.0)	6.5
Malibu Coast	39.2 (63.1)	6.7
Northridge (E. Oak Ridge)	41.2 (66.3)	7.0
Coronado Bank	41.3 (66.4)	7.6
North Frontal Fault Zone (West)	46.5 (74.9)	7.2
Santa Susana	48.3 (77.8)	6.7
Anacapa-Dume	48.4 (77.9)	7.5
Holser	53.3 (85.8)	6.5
San Jacinto-Anza	56.0 (90.2)	7.2
Rose Canyon	57.1 (91.9)	7.2
Oak Ridge (Onshore)	59.5 (95.7)	7.0
Elsinore-Julian	60.1 (96.8)	7.1
Simi-Santa Rosa	60.8 (97.9)	7.0

6.2 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code (CBSC, 2016) are provided in the following table and were determined at generalized center of the

alignment of Cypress Avenue and Ivy Avenue using the Seismic Design Maps application (USGS, 2018b) and are presented in the following table.

Table No. 5, CBC Seismic design Parameters

Seismic Parameters	
Site Coordinates	33.8636 N, 117.8819W
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_s	1.727g
Mapped 1-second Spectral Response Acceleration, S_1	0.616g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	1.727g
MCE 1-second period Spectral Response Acceleration, S_{M1}	0.924g
Design Spectral Response Acceleration for short period S_{DS}	1.151g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.616g
Maximum Peak Ground Acceleration, PGA_M	0.636g

6.3 Secondary Effects of Seismic Activity

In general, secondary effects of seismic activity include surface fault rupture, soil liquefaction, landslides, lateral spreading, and settlement due to seismic shaking, tsunamis, seiches, and earthquake-induced flooding. The site-specific potential for each of these seismic hazards is discussed in the following sections.

Surface Fault Rupture*:* The proposed alignment is not located within a currently designated State of California or Orange County Earthquake Fault Zone (CGS, 1998; Orange County, 2015a). There are no known active faults projecting toward or extending across the project alignment. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty but is considered low.

Liquefaction: Liquefaction is defined as the phenomenon in which a cohesionless soil mass suffers a substantial reduction in its shear strength due to the development of excess pore pressures. During earthquakes, excess pore pressures in saturated soil deposits may develop as a result of induced cyclic shear stresses, resulting in liquefaction.

Soil liquefaction generally occurs in submerged granular soils and non-plastic silts located within 50 feet of the ground surface during or after strong ground shaking. There are several general requirements for liquefaction to occur. They are as follows.

- Soils must be submerged.
- Soils must be loose to medium-dense.

- Soils must be relatively near the ground surface.
- Ground motion must be intense.
- Duration of shaking must be sufficient for the soils to lose shear resistance.

The pipeline alignment is not located within an area mapped as susceptible to liquefaction by the State of California or Orange County (CGS, 1998a and 1998b; Orange County, 2015a). Due to the absence of shallow groundwater, the risk of liquefaction is considered low.

Landslides: Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. Due to the relatively flat topography along the alignment, the risk of landsliding is considered low.

Lateral Spreading: Seismically induced lateral spreading involves primarily lateral movement of earth materials over deeper layers which have liquefied due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. Due to the low potential for liquefaction, the lateral spreading potential is also considered to be low.

Tsunamis: Tsunamis are large waves generated in large bodies of water by fault displacement or major ground movement. Based on the inland location of the proposed alignment, tsunamis do not pose a hazard to this alignment.

Seiches: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Seiching within the channels located adjacent to the proposed alignment is possible during a major seismic event coinciding with high flow.

Earthquake-Induced Flooding: Dams or other water-retaining structures may fail as a result of large earthquakes, resulting in flooding. The proposed alignment is located within the Prado Dam Indunation Area designated by Orange County (Orange County, 2015b).

7.0 LABORATORY TEST RESULTS

Laboratory testing was performed to determine the physical and chemical characteristics and engineering properties of the subsurface soils. Tests results are included in Appendix A, *Field Exploration* and Appendix B, *Laboratory Testing Program*. Discussions of the various test results are presented below.

7.1 Physical Testing

- In-situ Moisture and Dry Density – *In-situ* dry density and moisture content of the site soils were determined in accordance to ASTM Standard D2216 and D7263. Dry

densities of the upper 10 feet soils of the proposed alignment ranged from 91 to 122 pcf with moisture contents of 1 to 21 percent.

- Sand Equivalent – Four representative bulk soil samples were tested to evaluate sand equivalent (SE) in accordance with the ASTM Standard D2419 test method. The measured sand equivalents ranged from 28 to 49.
- R-value Tests – Two R-value tests were performed on representative bulk soil samples in accordance with Caltrans Test Method CT301. The results of the R-value tests were 22 and 53.
- Grain Size Analysis – Five representative samples were tested to determine the relative grain size distribution in accordance with the ASTM Standard C136. The test results are graphically presented in Drawing No. B-1, *Grain Size Distribution Results.* Based on the results, soils are typically silty sand and sand with silt.
- Maximum Dry Density and Optimum Moisture Content – Typical moisture-density relationships of two representative soil samples were tested in according with ASTM Standard D1557. The results are presented in Drawing No. B-2, *Moisture-Density Relationship Results*, in Appendix B, *Laboratory Testing Program.* The laboratory maximum dry densities were 126.0 and 133.0 pounds per cubic feet (pcf), with optimum moisture contents of 7.0 and 10.5 percent.
- Direct Shear – Four direct shear tests were performed on relatively undisturbed samples in accordance with ASTM D3080. The results of the direct shear tests are presented in Drawings No. B-3 through B-6, *Direct Shear Test Results,* in Appendix B, *Laboratory Testing Program*.

7.2 Chemical Testing - Corrosivity Evaluation

Four (one for I-57 bore and jack location and 3 for other locations along the alignment) representative bulk soil samples were tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests was to determine the corrosion potential of the soils when placed in contact with common construction materials. These tests were performed by AP Engineering and Testing, Inc. (Pomona, CA) in accordance with California Tests 643, 422, and 417. The test results are summarized in the table below and is presented in Appendix B, *Laboratory Testing Program.*

3 Other Locations (Borings No. BH-02, BH-05 and BH-09)

- The pH measurements of the samples tested ranged from 8.5 to 9.2.
- The sulfate contents of the samples tested ranged from 0.004 to 0.006 percent by weight.
- The chloride concentrations of the samples tested ranged from 32 to 35 ppm.
- The minimum electrical resistivities when saturated ranged from 4,225 to 9,981ohm-cm.

Bore and Jack at I-57 (BH-07)

- The pH measurement of the sample tested was 8.9.
- The sulfate content of the sample tested was 0.004 percent by weight.

- The chloride concentration of the sample tested was 32 ppm.
- The minimum electrical resistivity when saturated was14,730 ohm-cm.

8.0 EARTHWORK RECOMMENDATIONS

Recommendations of earthwork for pipe trenching and jacking and receiving pits are presented in the following subsections.

8.1 General

Prior to the start of construction, all existing underground utilities and appurtenances should be located within the proposed alignment. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications. All excavations should be conducted in such a manner as not to cause loss of bearing and/or lateral support of existing structures or utilities.

All debris, deleterious material, and surficial soils containing roots and perishable materials (if any), should be stripped and removed from the alignment. Deleterious material, including organics, concrete, and debris generated during excavation, should not be placed as fill.

Migration of fines from the surrounding native soils, in the case of water leaks from the pipe, must be considered in selecting the gradation of the materials placed within the trench, including bedding, pipe zone and trench zone backfill, as defined in the following sections. Such migration of fines may deteriorate pipe support and may result in settlement/ground loss at the surface.

8.2 Pipeline Subgrade Preparation

The final subgrade surface should be level, firm, uniform, free of loose materials, and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles, larger than 3 inches in dimension, if any, should be removed from the trench bottom and replaced with compacted on-site materials.

Any loose, soft and/or unsuitable materials encountered at the pipe sub-grade should be removed and replaced with an adequate bedding material.

During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

8.3 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe to 1 foot above the pipe. Pipe bedding should follow the guideline of the City of Placentia Standard

Drawing (ST. 1) *Sewer Pipe Trench Backfill* and *Pavement Resurfacing* (attached in Appendix C) for the pipeline segment located in the City of Placentia and the City of Fullerton Standard No. 313 *Arterial Street Pipe Trench Bedding and Backfill* for the pipeline segment located in the City of Fullerton (attached in Appendix C). Besides, additional information for pipe bedding are provided below.

To provide uniform and firm support for the pipe, compacted granular materials such as clean sand, gravel or ¾-inch crushed aggregate, or crushed rock may be used as pipe bedding material. The sand equivalent (SE) of soils along the alignment varies from 28 to 49. Typically, soils with sand equivalent value of 30 or more are used as pipe bedding material. The pipe designer should determine if the soils are suitable as pipe bedding material.

The type and thickness of the granular bedding placed underneath and around the pipe, if any, should be selected by the pipe designer. The load on the rigid pipes and deflection of flexible pipes and, hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe.

Bedding materials should be vibrated in-place to achieve compaction. Care should be taken to densify the bedding material below the springline of the pipe. Prior to placing the pipe bedding material, the pipe subgrade should be uniform and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable.

Migration of fines from the surrounding native and/or fill soils must be considered in selecting the gradation of any imported bedding material. We recommend that the pipe bedding material should satisfy the following criteria to protect migration of fine materials.

i. $$\frac{D15(F)}{D85(B)} \leq 5$$

ii. $$\frac{D50(F)}{D50(B)} < 25$$

iii. Bedding Materials must have less than 5 percent minus 75 µm (No. 200) sieve to avoid internal movement of fines.

Where,
F = Bedding Material
B = Surrounding Native and/or Fill Soils
*D*15(F) = Particle size through which 15% of bedding material will pass
*D*85(B) = Particle size through which 85% of surrounding soil will pass
*D*50(F) = Particle size through which 50% of bedding material will pass
*D*50(B) = Particle size through which 50% of surrounding soil will pass

8.4 Backfill Materials

The native soils encountered within the proposed alignment, free of debris or organic matter are suitable as compacted fill after proper processing and removal of oversize materials to meet the following criteria.

- No particles larger than 3 inches in largest dimension.
- Rocks larger than 1 inch should not be placed within the upper 12 inches of subgrade soils.
- Expansion index should be 20 or less.
- Plasticity index of 10 or less.
- Contain less than 30 percent by weight retained on ¾-inch sieve.
- Free of all organic matter, debris, or other deleterious material.

Imported soils, if used as fill, should be predominantly granular and meet the above criteria. Any imported fill should be tested and approved by geotechnical representative prior to delivery to the alignment.

8.5 Compacted Fill Placement

Fill soils should be thoroughly mixed and moisture conditioned to within ±3 percent of optimum moisture content for coarse soils and 0 to 2 percent above optimum moisture content for fine soils and compacted to at least 90 percent of the laboratory maximum dry density.

At least the upper 12 inches of subgrade soils underneath pavements intended to support vehicle loads should be scarified, moisture conditioned, and compacted to at least 95 percent of the laboratory maximum dry density.

Fill materials should not be placed, spread or compacted during unfavorable weather conditions. When work is interrupted by heavy rain, filling operations should not resume until the geotechnical consultant approves the moisture and density conditions of the previously placed fill.

8.6 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface. Excavated on-site soils free of oversize particles and deleterious matter may be used to backfill the trench zone. Trench Backfill should follow the guideline of the City of Placentia Standard Drawing (ST. 1) *Sewer Pipe Trench Backfill* and *Pavement Resurfacing* (attached in Appendix C) for the pipeline segment located in the City of Placentia and the City of Fullerton Standard No. 313 *Arterial Street Pipe Trench Bedding and Backfill* for the pipeline segment located in the City of Fullerton (attached in Appendix C). Besides, additional recommendations on trench backfill are presented as follows.

- Trench excavations to receive backfill should be free of trash, debris or other unsatisfactory materials at the time of backfill placement.
- Trench zone backfill should be compacted to at least 90 percent of the laboratory maximum dry density as per ASTM D1557 test method. At least the upper 1 foot of trench backfill underlying pavement should be compacted to at least 95 percent of the laboratory maximum dry density as per ASTM D1557 test method.
- Particles larger than 1 inch should not be placed within 12 inches of the pavement subgrade. No more than 30 percent of the backfill volume should be larger than ¾-inch in the largest dimension. Gravel should be well mixed with finer soil. Rocks larger than 3 inches in the largest dimension should not be placed as trench backfill.
- Trench backfill should be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers or mechanical tampers to achieve the density specified herein. The backfill materials should be brought to within ± 3 percent of optimum moisture content for coarse-grained soil, and between optimum and 2 percent above optimum for fine-grained soil, then placed in horizontal layers. The thickness of uncompacted layers should not exceed 8 inches. Each layer should be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.
- The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, structures, utilities and completed work.
- The field density of the compacted soil should be measured by the ASTM D1556 (Sand Cone) or ASTM D6938 (Nuclear Gauge) or equivalent.
- Observations and field tests should be performed by the project soils consultant to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort should be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.
- It should be the responsibility of the contractor to maintain safe working conditions during all phases of construction.
- Trench backfill should not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations should not resume until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are in compliance with project specifications.

8.7 Backfill of Jacking and Receiving Pits

We anticipate that the depths of the boring/jacking and receiving pits will be within 15 feet bgs for I-57 crossing and within 10 feet bgs for railway crossing. The pits should be backfilled following construction of the pipe crossings.

The pit bottoms should be free of trash, debris or other unsatisfactory materials at the time of backfill placement. The bottoms of the excavations should be scarified to a minimum depth of 12 inches below subgrade, moisture conditioned to within 3 percent

of optimum moisture content, and recompacted to at least 90 percent of the laboratory maximum dry density.

The backfill soils should be well-blended and moisture conditioned to within 3 percent of optimum moisture content. The backfill should be placed in loose lifts not exceeding 8 inches in thickness and compacted to at least 90 percent of the laboratory maximum dry density per ASTM Standard D1557. If the ground surface is to be paved, the backfill within 12 inches of the pavement subgrade should be compacted to at least 95 percent of the laboratory maximum dry density.

The contractor should select the equipment and processes to be used to achieve the specified density without damage to adjacent ground, existing facilities, utilities, or completed work.

9.0 DESIGN RECOMMENDATIONS

General design recommendations, resistance to lateral loads, pipe design parameters, bearing pressures, and soil corrosivity are discussed in the following subsections.

9.1 General

Where pipes connect to rigid structures and are subjected to significant loads as the backfill is placed to finish grade, we recommend that provisions be incorporated in the design to provide support of these pipelines where they exit the structures. Consideration can be given to flexible connections, concrete slurry support beneath the pipes where they exit the structures, overlaying the pipes with a few inches of compressible material, (i.e. Styrofoam, or other materials), or other techniques.

The various design recommendations provided in this section are based on the assumption that the above earthwork recommendations will be implemented.

9.2 Resistance to Lateral Loads

Resistance to lateral loads can be assumed to be provided by passive earth pressures and friction between construction materials and native soils. The resistance to lateral loads were estimated by using on-site native soils strength parameters obtained from laboratory testing. The resistance to lateral loads recommended for use in design of the thrust blocks are presented in the following table.

Table No. 6, Resistance to Lateral Loads

Lateral Resistance Soil Parameters	W. Crowther Ave. (S. Placentia Ave. to S. Bradford Ave.)	S. Placentia Ave. (E. Orangethorpe Ave. to W. Crowther Ave.)	E. Orangethorpe Ave. (OCSD's trunk sewer to S. Placentia Ave.)	BNSF Railway Track (Bore and Jack Location)	I-57 and OCPW Drain (Bore and Jack Location)
Passive earth pressure (psf/ft depth)	240	230	200	220	250
Maximum allowable bearing pressure against native soils (psf)	2,000	1,800	1,800	1,800	2,000
Coefficient of friction between formed concrete and native soils, fs	0.3	0.3	0.3	0.3	0.3

9.3 Soil Parameters for Pipe Design

Structural design requires proper evaluation of all possible loads acting on pipes and structures. The stresses and strains induced on buried pipes and walls depend on many factors, including the type of soil, density, bearing pressure, angle of internal friction, coefficient of passive earth pressure, and coefficient of friction at the interface between the backfill and native soils. The recommended values of the various soil parameters for design are provided in the following table.

Table No. 7, Soil Parameters for Pipe Design

Soil Parameters	Parameters				
	W. Crowther Ave. (S. Placentia Ave. to S. Bradford Ave.)	S. Placentia Ave. (E. Orangethorpe Ave. to W. Crowther Ave.)	E. Orangethorpe Ave. (OCSD's trunk sewer to S.Placentia Ave.)	BNSF Railway Track (Bore and Jack Location)	I-57 and OCPW Drain (Bore and Jack Location)
Average compacted fill total unit weight, γ (pcf) (assume 92% relative compaction)	130	128	128	130	130
Angle of internal friction of soils, ϕ	30	30	27	27	32
Soil cohesion, c (psf)	20	20	20	20	10

Soil Parameters	Parameters				
	W. Crowther Ave. (S. Placentia Ave. to S. Bradford Ave.)	S. Placentia Ave. (E. Orangethorpe Ave. to W. Crowther Ave.)	E. Orangethorpe Ave. (OCSD's trunk sewer to S.Placentia Ave.)	BNSF Railway Track (Bore and Jack Location)	I-57 and OCPW Drain (Bore and Jack Location)
Coefficient of friction between concrete and native soils, fs	0.30	0.30	0.30	0.30	0.30
Coefficient of friction between PVC pipe and native soils, fs	0.25	0.25	0.25	0.25	0.25
Bearing pressure against native soils (psf)	2,000	1,800	1,800	1,800	2,000
Coefficient of passive earth pressure, Kp	3.25	3.00	2.66	2.66	3.25
Coefficient of active earth pressure, Ka	0.31	0.33	0.38	0.38	0.31
Modulus of Soil Reaction E' (psi)	1,000	1,000	1,000	1,000	1,000

9.4 Bearing Pressure for Anchor and Thrust Blocks

An allowable net bearing pressure presented in Table No. 7, *Soil Parameters for Pipe Design* may be used for anchor and thrust block design against alluvial soils. Such thrust blocks should be at least 18 inches wide.

If normal code requirements are applied for design, the above recommended bearing capacity and passive resistances may be increased by 33 percent for short duration loading such as seismic or wind loading.

9.5 Jacking Force

The pipe jacking force is function of soil conditions, over burden pressure, pipe weight, size, annular space between pipe and soil, lubricant of the pipe, and installation time. The jacking force is equal to penetration resistance plus frictional resistance. Proper assessment of jacking force is required to design and select jacking pipes and thrust block.

The frictional resistance against the pipe during jacking is a function of the overburden pressure on the pipe, the friction angle between the pipe and the soil, the adhesion between the pipe and the soil, the surface area of the pipe, and the weight of the pipe.

The penetration resistance varies along the bore-and-jack depending on soil type and shape and steering action of the boring head.

Presence of gravel/cobbles, if any, in the path of bore-and-jack operation can bring a sudden increase in the jacking force. Therefore, installation of pressure relief valves at the drive pit and indicators on the control panel is desirable to ensure that the allowable jacking force is not exceeded.

Design parameters for jacking force system are presented Table No. 8, *Jacking System Design Parameters*.

Table No. 8, Jacking System Design Parameters

Locations	Parameter	Value
BH-04 and BH-05	Bearing Pressure (psf)	2,000
	At-rest Lateral Earth Pressure (psf)	60
	Passive Earth Pressure (psf)	230
	Soil Total Unit weight (pcf)	130
	Friction, between soil and concrete	0.35
	Friction, between soil and steel	0.25
BH-06 and BH-07	Bearing Pressure (psf)	2,000
	At-rest Lateral Earth Pressure (psf)	62
	Passive Earth Pressure (psf)	250
	Soil Total Unit weight (pcf)	130
	Friction, between soil and concrete	0.35
	Friction, between soil and steel	0.25

We recommend that the ultimate compressive strength of the pipe should be at least 2.5 times the design jacking loads of the pipe.
The pipe designer should determine an appropriate factor of safety to be incorporated into the design of thrust block. The bore-and-jack contractor is responsible for selection of jacking force system and the final design of thrust blocks.

The jacking operations should be controlled always to minimize loss of ground. Steel casing sections should be jacked forward concurrently with the boring operation to provide continuous ground support.

A welded steel pipe casing is required to be installed at the crossing location. The annulus should be injected with cellular concrete or grout to fill any possible voids created by the crossing operation.

9.6 Soil Corrosivity

The results of chemical testing of four representative soil samples were evaluated for corrosivity evaluation with respect to common construction materials such as concrete and steel (if present). The test results are presented in Appendix B, *Laboratory Testing Program* in Table No. B-4, *Summary of Corrosivity Test Results*, and are discussed below.

The sulfate content of the sampled soil corresponds to American Concrete Institute (ACI) exposure category S0 (soluble sulfate in soil is less than 0.1, percent by weight) for this sulfate concentration (ACI 318-14, Table 19.3.1.1). No concrete type restrictions are specified for exposure category S0 (ACI 318-14, Table 19.3.2.1). A minimum compressive strength of 2,500 psi is recommended.

We anticipate that concrete structures, if any, will be exposed to moisture from precipitation and irrigation. Based on the alignment location and the results of chloride testing of the alignment soils, we do not anticipate concrete structures will be exposed to external sources of chlorides, such as deicing chemicals, salt, brackish water, or seawater. ACI specifies exposure category C1 where concrete is exposed to moisture, but not to external sources of chlorides (ACI 318-14, Table 19.3.1.1). ACI provides concrete design recommendations in ACI 318-14, Table 19.3.2.1, including a compressive strength of at least 2,500 psi and a maximum chloride content of 0.3 percent.

The minimum electrical resistivities when saturated ranged from 4,225 to 14,730 ohm-cm. These values indicate that the tested soils along the alignment are moderately corrosive to mildly corrosive ferrous metals in contact with the soil (Romanoff, 1957). Converse does not practice in the area of corrosion consulting. A qualified corrosion consultant should provide appropriate corrosion mitigation measures for any ferrous metals in contact with the alignment soils.

9.7 Asphalt Concrete Pavement

Two representative soil samples were tested to determine the R-value of the subgrade soils. The tested R-values were 22 and 53 for South Placentia Avenue and West Crowther Avenue, respectively. For pavement design, we have utilized R-values of 20 (R-value greater than 20 and less than 30) and 30 (R-value greater than 30) and design Traffic Indices (TIs) ranging from 6 to 9.

Based on the above information, Converse has performed an analysis to evaluate the requirements for pavement section thickness. Asphalt concrete and aggregate base thickness results are calculated using the *Caltrans Highway Design Manual (Caltrans, 2017)*, Chapter 630 with a safety factor of 0.2 for asphalt concrete/aggregate base section and 0.1 for full depth asphalt concrete section. Preliminary asphalt concrete pavement sections are presented in the following table below.

Table No. 9, Recommended Preliminary Pavement Sections

R-value	Street	Traffic Index (TI)	Pavement Section		
			Option 1		Option 2
			Asphalt Concrete (inches)	Aggregate Base (inches)	Full AC Section (inches)
20	S. Placentia Avenue	6.0	4.0	9.0	9.0
		7.0	4.5	11.0	11.0
		8.0	4.5	14.5	13.0
		9.0	5.5	15.0	16.0
30	W. Crowther Avenue	6.0	4.0	7.0	8.0
		7.0	4.5	9.0	10.0
		8.0	4.5	12.0	12.0
		9.0	5.5	13.2	14.0

Pavement section should follow the guideline of the City of Placentia Standard Drawing (ST. 1) *Sewer Pipe Trench Backfill* and *Pavement Resurfacing* (attached in Appendix C) for the pipeline segment located in the City of Placentia and the City of Fullerton Standard No. 313 *Arterial Street Pipe Trench Bedding and Backfill* for the pipeline segment located in the City of Fullerton (attached in Appendix C) or Table No. 9, *Recommended preliminary Pavement Sections*, whichever is greater. At or near the completion of trench backfill, the subgrade should be tested to evaluate the actual subgrade R-value for final pavement design.

Prior to placement of aggregate base, at least the upper 12 inches of subgrade soils should be scarified, moisture-conditioned if necessary, and recompacted to at least 95 percent of the laboratory maximum dry density as defined by ASTM Standard D1557 test method.

Base materials should conform to Section 200-2 of the Greenbook (Public Works Standards, 2015) or as required by the guideline of the City of Placentia Standard Drawing (ST. 1) *Sewer Pipe Trench Backfill* and *Pavement Resurfacing* (attached in Appendix C) for the pipeline segment located in the City of Placentia and the City of Fullerton Standard No. 313 *Arterial Street Pipe Trench Bedding and Backfill* for the pipeline segment located in the City of Fullerton (attached in Appendix C) and should be placed in accordance with Section 301-2 of the Greenbook.

Asphalt concrete materials should conform to Section 203 of the Greenbook or as required by the guideline of the City of Placentia Standard Drawing (ST. 1) *Sewer Pipe Trench Backfill* and *Pavement Resurfacing* (attached in Appendix C) for the pipeline segment located in the City of Placentia and the City of Fullerton Standard No. 313 *Arterial Street Pipe Trench Bedding and Backfill* for the pipeline segment located in the City of Fullerton (attached in Appendix C) and should be placed in accordance with Section 302.5 of the Greenbook.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

10.0 CONSTRUCTION RECOMMENDATIONS

Recommendations on construction of the pipeline are as follows.

10.1 General

Prior to the start of construction, all existing underground utilities should be located along the pipeline alignment. Such utilities should either be protected in-place or removed and replaced during construction as required by the project specifications.

Vertical braced excavations are feasible along the pipeline alignment. Sloped excavations may not be feasible in locations adjacent to existing utilities or structures, including utilities, channels, railroad easements, or other improvement. Recommendations pertaining to temporary excavations are presented in this section.

Where the side of the excavation is a vertical cut, it should be adequately supported by temporary shoring to protect workers and any adjacent structures.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the owner's representative and the competent person employed by the contractor in accordance with regulations. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

10.2 Temporary Sloped Excavations

Temporary open-cut trenches may be constructed with side slopes as recommended in the table below. Temporary cuts encountering soft and wet fine-grained soils, dry loose, cohesionless soils, or loose fill from trench backfill may have to be constructed at a flatter gradient than presented below.

Table No. 10, Slope Ratios for Temporary Excavations

Soil Type	OSHA Soil Type	Depth of Cut (feet)	Recommended Maximum Slope (Horizontal:Vertical)[1]
Silty Sand (SM) and Sand with Silt (SP-SM)	C	0-10	1.5:1
		10-20	2:1
Sandy Silt	B	0-10	1:1
		10-20	1.5:1
Sandy Clay	A	0-10	0.75:1
		10-20	1:1

[1] Slope ratio is assumed to be constant from top to toe of slope, with level adjacent ground.

For steeper temporary construction slopes or deeper excavations, or unstable soil encountered during the excavation, shoring or trench shields should be provided by the contractor as necessary to protect the workers in the excavation.

Surfaces exposed in sloped excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction materials, should not be placed within 5 feet of the unsupported slope edge. Stockpiled soils with a height higher than 6 feet will require greater distance from trench edges.

10.3 Shoring Design

Temporary shoring will be required where open sloped excavations will not be feasible due to unstable soils or due to nearby existing structures or facilities. Temporary shoring may consist of conventional soldier piles and lagging or sheet piles. The shoring for the pipe excavations may be laterally supported by walers and cross bracing or may be cantilevered. Drilled excavations for soldier piles will require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation.

The active earth pressure behind any shoring depends primarily on the allowable movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressures.

The lateral earth pressures to be used in the design of shoring is presented in the following table.

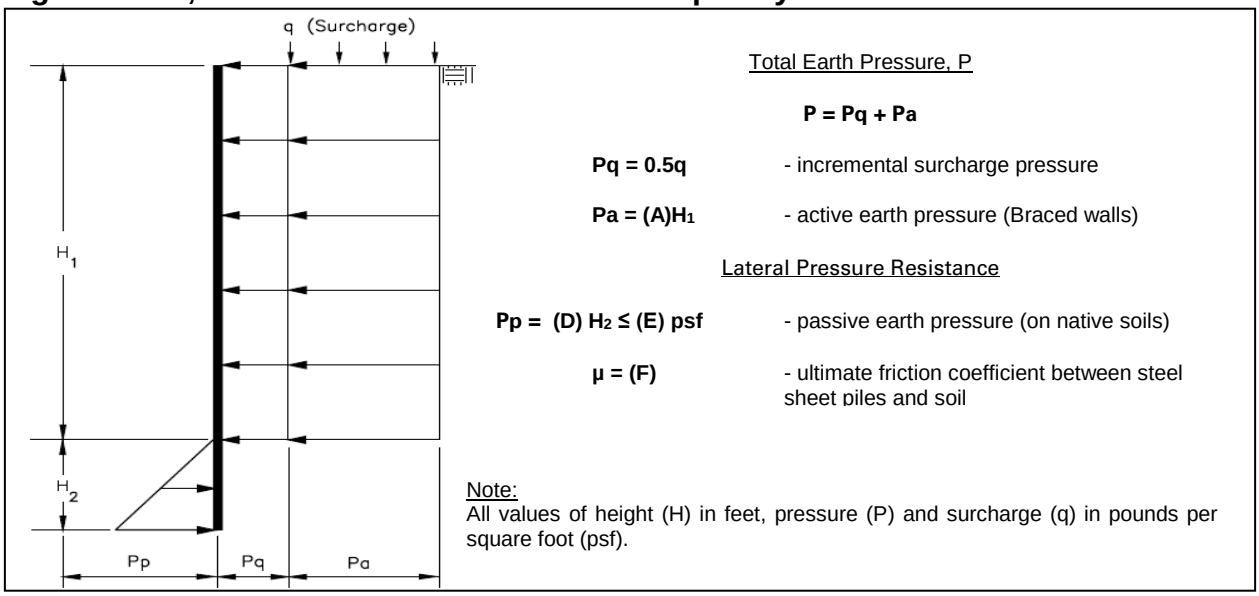
Table No. 11, Lateral Earth Pressures for Temporary Shoring

Lateral Resistance Soil Parameters*	W. Crowther Ave. (S. Placentia Ave. to S. Bradford Ave.)	S. Placentia Ave. (E. Orangethorpe Ave. to W. Crowther Ave.)	E. Orangethorpe Ave. (OCSD's trunk sewer to S.Placentia Ave.)	BNSF Railway Track (Bore and Jack Location)	I-57 and OCPW Drain (Bore and Jack Location)
Active Earth Pressure (Braced Shoring) (psf) (A)	24	24	27	30	25
Active Earth Pressure (Cantilever Shoring) (psf) (B)	40	40	45	50	42
At-Rest Earth Pressure (Cantilever Shoring) (psf) (C)	60	60	65	70	62
Passive earth pressure (psf per foot of depth) (D)	240	230	200	220	250
Maximum allowable bearing pressure against native soils (psf) (E)	2,000	1,800	1,800	1,800	2,000
Coefficient of friction between sheet pile and native soils, fs (F)	0.25	0.25	0.25	0.25	0.25

* Parameters A through F are used in Figures No. 3 and 4 below.

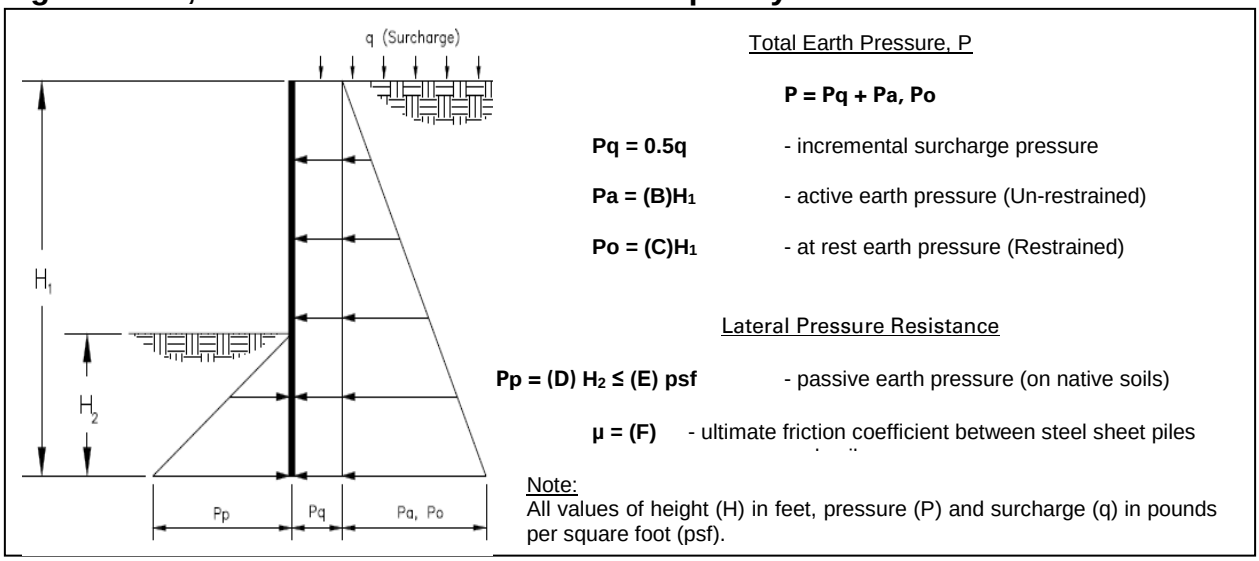
Restrained (braced) shoring systems should be designed based on Figure No. 3, *Lateral Earth Pressures for Temporary Braced Excavation* to support a uniform rectangular lateral earth pressure.

Figure No. 3, Lateral Earth Pressures for Temporary Braced Excavation



Unrestrained (cantilever) design of cantilever shoring consisting of soldier piles spaced at least two diameters on-center or sheet piles, can be based on Figure No. 4, *Lateral Earth Pressures on Temporary Cantilever Wall*.

Figure No. 4, Lateral Earth Pressures on Temporary Cantilever Wall



The provided pressures assume no hydrostatic pressures. If hydrostatic pressures are allowed to build up, the incremental earth pressures below the ground-water level should be reduced by 50 percent and added to hydrostatic pressure for total lateral pressure.

Passive resistance includes a safety factor of 1.5. The upper 1 foot for passive resistance should be ignored unless the surface is confined by a pavement or slab. In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. As previously mentioned, all shoring should be designed and installed in accordance with state and federal safety regulations.

The contractor should have provisions for soldier pile and sheet pile removal. All voids resulting from removal of shoring should be filled. The method for filling voids should be selected by the contractor, depending on construction conditions, void dimensions and available materials. The acceptable materials, in general, should be non-deleterious, and able to flow into the voids created by shoring removal (e.g. concrete slurry, “pea” gravel, etc).

Excavations for the proposed pipeline should not extend below a 1:1 horizontal:vertical (H:V) plane extending from the bottom of any existing structures, utility lines or streets.

Any proposed excavation should not cause loss of bearing and/or lateral supports of the existing utilities or streets.

If the excavation extends below a 1:1 (H:V) plane extending from the bottom of the existing structures, utility lines or streets, a maximum of 10 feet of slope face parallel to the existing improvement should be exposed at a time to reduce the potential for instability. Backfill should be accomplished in the shortest period of time and in alternating sections.

10.4 Trenchless Pipe Crossings Recommendations

Trenchless pipe crossing recommendations are presented in the following subsections.

10.4.1 Ground Classification for Trenchless Pipe Crossings

The Tunnelman's Ground Classification (USDOT, 2009) categorizes predictive soil behaviors for saturated and unsaturated conditions as presented in the following table.

Table No. 12, Tunnelman's Ground Classification for Soils

Ground Classification	Ground Behavior	Typical Soil Types
Hard	Tunnel heading may be advanced without roof support.	Cemented sand and gravel and over-consolidated clay above the ground water table.
Firm	Heading can be advanced without initial support, and final lining can be constructed before ground starts to move.	Loess above water table; hard clay, marl, cemented sand and gravel when not highly overstressed.
Raveling	Chunks or flakes of material begin to drop out of the arch or walls sometime after the ground has been exposed, due to loosening or to over-stress and "brittle" fracture (ground separates or breaks along distinct surfaces, opposed to squeezing ground). In fast raveling ground, the process starts within a few minutes, otherwise the ground is slow raveling.	Residual soils or sand with small amounts of binder may be fast raveling below the water tale, slow raveling above. Stiff fissured clays may be slow or fast raveling depending upon degree of overstress.

Ground Classification	Ground Behavior	Typical Soil Types
Squeezing	Ground squeezes or extrudes plastically into tunnel, without visible fracturing or loss of continuity, and without perceptible increase in water content. Ductile, plastic yield and flow due to overstress.	Ground with low frictional strength. Rate of squeeze depends on degree of overstress. Occurs at shallow to medium depth in clay of very soft to medium consistency. Stiff to hard clay under high cover may move in combination of raveling at excavation surface and squeezing at depth behind surface.
Swelling	Ground absorbs water, increases in volume, and expands slowly into the tunnel.	Highly pre-consolidated clay with plasticity index in excess of about 30, generally containing significant percentages of montmorillonite.
Running	Granular materials without cohesion are unstable at a slope greater than their angle of repose (approx. 30º -35º). When exposed at steeper slopes they run like granulated sugar or dune sand until the slope flattens to the angle of repose.	Clean, dry angular materials.
Cohesive Running	Granular materials without cohesion are unstable at a slope greater than their angle of repose (approx. 30º -35º). When exposed at steeper slopes they run like granulated sugar or dune sand until the slope flattens to the angle of repose.	Apparent cohesion in moist sand, or weak cementation in any granular soil, may allow the material to stand for a brief period of raveling before it breaks down and runs.
Flowing	A mixture of soil and water flows into the tunnel like a viscous fluid. The material can enter the tunnel from the invert as well as from the face, crown, and walls, and can flow for great distances, completely filling the tunnel in some cases.	Below the water table in silt, sand, or gravel without enough clay content to give significant cohesion and plasticity. May also occur in highly sensitive clay when such material is disturbed.

It is our opinion that trenchless construction at the proposed alignment can be accomplished by an experienced contractor using jacking/micro-tunneling equipment. Provisions for controlling raveling and running sand soils should be provided during the trenchless operation to minimize ground loss and ground subsidence.

Site-specific soil classifications pertaining to the proposed alignment are presented in Table No. 13, *Site Specific Ground Classifications.*

It is the contractor's responsibility to design and select the appropriate tunnel construction method, support system and to follow the requirements of the health and

safety rules of the State of California pertaining to tunnel construction and permit requirements of the Riverside County, and other local agencies, if applicable.

10.4.2 Bore-and-Jack Crossing Recommendations

Bore-and-jack is a trenchless construction method for pipe where open-cut technique is not feasible. This is a multi-stage process of construction which includes a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. Manual control is used to jack the pipe at the starting point of the alignment with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the pipe's annular space.

The selection of trenchless pipe crossing methods and equipment depends on pipe material, length of crossing, and anticipated ground conditions, and should be made by the contractor. Bore-and-jack pipe construction operations involve the initial construction of a jacking/tunneling pit and a receiving pit at each end of the pipe segment to be jacked. Site-specific ground conditions and soil classifications pertaining to this project are presented in the following table.

Table No. 13, Site Specific Ground Classifications

Crossing Location	Boring No.	Approximate Depth (Feet)	Soil Types	Method
Railway Track	BH-04	16.5	SM, SP-SM	Bore-and-jack
	BH-05	31.5	SM, SP-SM, SM	
OCPW' Storm Drain and I-57 Freeway	BH-06	31.5	CL, SP-SM	Bore-and-jack
	BH-07	31.5	ML, SP, SP-SM	

The working/access shafts are utilized to remove the spoil and to transport the construction materials and personnel for a Bore-and-jack project. The vertical face of the working shaft may be shored with sheet piles and/or soldier piles and lagging. The face of the shaft also can be supported by ribs and laggings. The design of sheet piling, soldier beam and lagging system may be designed according to the recommendations provided in Section 10.3, *Shoring Design*. Frequent contact grouting may be necessary to reinforce the support during construction.

The total load that can be developed in the jacking plate would depend on the depth and area of the plate. The jacking equipment should not impose a reaction of more than the allowable net bearing pressure summarized in Table No. 8, *Jacking System Design Parameters* on the stabilized soils within the jacking pit.

Grouting through the pipe casing after jacking is recommended to fill any possible voids created by the jacking operation. Jacking operations should be performed in accordance with the Standard Specifications for Public Works Construction, Sections

306-2 and 306-3 (Public Works Standards, 2015). Contractor should maintain standard grouting method so that no heave occurs.

Excavation procedures and shoring systems should be properly designed and implemented/installed to minimize the effect of settlement during construction. The contractor is responsible for minimizing impacts of crossing operations. Ground distress potential along a crossing depends on a number of factors, including type of soils, type of face support, internal pressure maintained to support the face, length of unlined zone, if any, and the amount of gap between the shield and the surrounding soils. The potential of any significant ground distress at the surface can be minimized by selecting the proper equipment and construction method.

The zone of influence of properly performed pipe crossing should be limited to a distance of about 2D above the crown of the shield, where D is the diameter of the shield. When the depth of crown cover is about 2D or more, maximum ground surface settlement, if any, can be expected to be less than the thickness of the gap around the pipe. Higher ground settlement may occur for less depth of cover and inadequately supported pits can induce significant ground movement or even collapse.

It is the contractor's responsibility to document the existing pre-construction conditions of streets and any facilities, and monitor deformations during construction. We recommend that the ground surface above crossing operations be continuously monitored during construction using a surface settlement monument to make sure any vertical and horizontal movements are within allowable limits. Corrective action will be required by the contractor if deformations exceed the allowable limits.

11.0 GEOTECHNICAL SERVICES DURING CONSTRUCTION

The project geotechnical consultant should review plans and specifications as the project design progresses. Such review is necessary to identify design elements, assumptions, or new conditions which require revisions or additions to our geotechnical recommendations.

The project geotechnical consultant should be present to observe conditions during construction. Testing should be performed to determine density and moisture of the during pipeline installation. Geotechnical observation and testing should be performed as needed to verify compliance with project specifications. Additional geotechnical recommendations may be required based on subsurface conditions encountered during construction.

12.0 CLOSURE

This report is prepared for the project described herein and is intended for use solely by the Dudek, and their authorized agents, to assist in the design and construction of the proposed project. Our findings and recommendations were obtained in accordance with

generally accepted professional principles practiced in geotechnical engineering. We make no other warranty, either expressed or implied.

Converse Consultants is not responsible or liable for any claims or damages associated with interpretation of available information provided to others. Field exploration identifies actual soil conditions only at those points where samples are taken, when they are taken. Data derived through sampling and laboratory testing is extrapolated by Converse employees who render an opinion about the overall soil conditions. Actual conditions in areas not sampled may differ. In the event that changes to the project occur, or additional, relevant information about the project is brought to our attention, the recommendations contained in this report may not be valid unless these changes and additional relevant information are reviewed and the recommendations of this report are modified or verified in writing. In addition, the recommendations can only be finalized by observing actual subsurface conditions revealed during construction. Converse cannot be held responsible for misinterpretation or changes to our recommendations made by others during construction.

As the project evolves, a continued consultation and construction monitoring by a qualified geotechnical consultant should be considered an extension of geotechnical investigation services performed to date. The geotechnical consultant should review plans and specifications to verify that the recommendations presented herein have been appropriately interpreted, and that the design assumptions used in this report are valid. Where significant design changes occur, Converse may be required to augment or modify the recommendations presented herein. Subsurface conditions may differ in some locations from those encountered in the explorations, and may require additional analyses and, possibly, modified recommendations.

Design recommendations given in this report are based on the assumption that the recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the actual alignment conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

13.0 REFERENCES

AMERICAN CONCRETE INSTITUTE (ACI), 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary, dated October 2414.

BLAKE, T. F., 2000, EQFAULT, Computer Programs for Performing Probabilistic, and Seismic Coefficient Analysis and Historical Earthquake Search.

CALIFORNIA DEPARTMENT OF TRANSPORTATION (Caltrans), 2014, Design Information Bulletin 83-04, dated August 1, 2014.

CALIFORNIA GEOLOGICAL SURVEY (formerly California Division of Mines and Geology), 1998a, Seismic Hazard Zones, Anaheim Quadrangle, Orange County, California, scale 1:24,000, dated April 15, 1998.

CALIFORNIA GEOLOGICAL SURVEY (formerly California Division of Mines and Geology), 1998b, Seismic Hazard Zones, Orange Quadrangle, Orange County, California, scale 1:24,000, dated April 15, 1998.

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD (SWRCB), 2018, GeoTracker database (http://geotracker.waterboards.ca.gov/), accessed on October, 2018.

CAO, T., et al., 2003, The Revised 2002 California Probabilistic Seismic Hazard Maps, (http://www.consrv.ca.gov/cgs/rghm/psha/fault_parameters/pdf/Documents/2002_CA_Hazard_Maps.pdf), dated June 2003.

DAS, B.M., 2011, Principles of Foundation Engineering, Seventh Edition, published by Global Engineering, 2011.

HOWARD A. Pipe Installation, Relativity Publishing, 2002.

MORTON, D.M. and MILLER, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangles, California, U.S. Geological Survey Open-File Report 2006-1217, scale 1:100,000.

MOSER A. P. Buried Pipe Design, Second Edition, published by McGraw-Hill, 2001.

ORANGE COUNTY, 2015a, Orange County General Plan, Chapter III. Land Use Element dated October 2015.

ORANGE COUNTY, 2015b, Orange County General Plan, Chapter IX. Safety Element dated October 2015.

PUBLIC WORKS STANDARDS, INC., 2015, Standard Specifications for Public Works Construction ("Greenbook"), 2015.

ROMANOFF, MELVIN, 1957, Underground Corrosion, National Bureau of Standards Circular 579, dated April, 1957.

U.S. DEPARTMENT OF TRANSPORTATION (USDOT) FEDERAL HIGHWAY ADMINISTRATION, 2009, Technical Manual for Design and Construction of Road Tunnels — Civil Elements, Publication No. FHWA-NHI-10-034, dated December 2009.

U.S. GEOLOGICAL SURVEY (USGS), 2018a, National Water Information System: Web Interface (http://nwis.waterdata.usga.gov/nwis/gwlevels), accessed on October, 2018.

U.S. GEOLOGICAL SURVEY (USGS), 2018b, U.S. Seismic Design Maps Application (http://geohazards.usgs.gov/designmaps/us/application.php), accessed on October, 2018.

Appendix A

Field Exploration

APPENDIX A

FIELD EXPLORATION

Our field investigation included site reconnaissance and subsurface exploration program consisting of drilling soil borings. During the site reconnaissance, the surface conditions were noted and the borings were marked along the alignment at locations approved by Dudek. These locations were marked using approximate distances from nearby landmarks as a guide and should be considered accurate only to the degree implied by the method used to locate them.

Nine exploratory borings (BH-01 through BH-09) were drilled between September 14 and 18, 2018 to investigate the subsurface conditions along the proposed alignment. The borings were drilled to the planned maximum depths of 16.5 and 21.5 feet below existing ground surface (bgs). Borings BH-04 and BH-05 will be on either side of bore and jack pits at BNSF railway track. Borings BH-06 and BH-07 will be on either side of bore and jack pits at I-57 freeway and OCPW's storm drain channel. Existing pavement thicknesses were measured at the boring locations.

The borings were advanced using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers for soils sampling. Encountered materials were continuously logged by a Converse geologist and classified in the field by visual classification in accordance with the Unified Soil Classification System. Where appropriate, the field descriptions and classifications have been modified to reflect laboratory test results.

Relatively undisturbed samples were obtained using California Modified Samplers (2.4 inches inside diameter and 3.0 inches outside diameter) lined with thin sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches. Blow counts at each sample interval are presented on the boring logs. Samples were retained in brass rings (2.4 inches inside diameter and 1.0 inch in height) and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Bulk samples of typical soil types were also obtained.

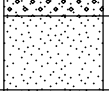
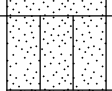
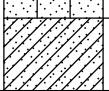
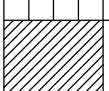
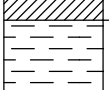
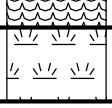
The exact depths at which material changes occur cannot always be established accurately. Unless a more precise depth can be established by other means, changes in material conditions that occur between drive samples are indicated on the logs at the top of the next drive sample.

Standard Penetration Testing (SPT) was also performed in accordance with the ASTM Standard D1586 test method in borings BH-06 and BH-07 at a depth of 20 bgs using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, falling 30 inches for each blow. The recorded blow counts for every 6 inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings.

Following the completion of logging and sampling, the borings were backfilled with soil cuttings, tamped, and surface patched with cold asphalt concrete. If construction is delayed, the surface of the borings may settle over time. So, we recommend the owner monitor the boring locations and backfill any depressions that might occur.

For a key to soil symbols and terminology used in the boring logs, refer to Drawing No. A-1, *Unified Soil Classification and Key to Boring Log Symbols*. For logs of borings see Drawings No. A-2 through A-10, *Logs of Borings*.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler (CMS).

DRIVE SAMPLE No recovery

BULK SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS			
TEST TYPE (Results shown in Appendix B)		STRENGTH	
		Pocket Penetrometer	p
		Direct Shear	ds
		Direct Shear (single point)	ds*
		Unconfined Compression	uc
CLASSIFICATION		Triaxial Compression	tx
Plasticity	pi	Vane Shear	vs
Grain Size Analysis	ma	Consolidation	c
Passing No. 200 Sieve	wa	Collapse Test	col
Sand Equivalent	se	Resistance (R) Value	r
Expansion Index	ei	Chemical Analysis	ca
Compaction Curve	max	Electrical Resistivity	er
Hydrometer	h	Permeability	perm
Disturb	Dist.	Soil Cement	sc

Apparant Density	Very Loose	Loose	Medium	Dense	Very Dense
SPT (N)	< 4	4 - 11	11 - 30	31 - 50	> 50
CA Sampler	< 5	5 - 12	13 - 35	36 - 60	> 60
Relative Density (%)	< 20	20 - 40	40 - 60	60 - 80	> 80

Consistency	Very Soft	Soft	Medium	Stiff	Very Stiff	Hard
SPT (N)	< 2	2-4	5-8	9-15	16-30	> 30
CA Sampler	< 3	3-6	7-12	13-25	26-50	> 50

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **A-1**

Project ID: 18-32-102-01.GPJ; Template: KEY

Log of Boring No. BH-01

Dates Drilled: 9/18/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 180 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		6" Asphalt Concrete/5" Concrete						
		ALLUVIUM						
		SILTY SAND (SM): fine to medium-grained, brown.			13/20/21			NR
5					21/16/14	14	91	ma
		SAND (SP): fine to coarse-grained, trace silt, brown.			16/11/15	2	103	
10					7/11/29	1	107	
15					15/21/22	2	101	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/18/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-2

Log of Boring No. BH-02

Dates Drilled: 9/18/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 184 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/5" Concrete						
		ALLUVIUM **SILTY SAND (SM):** fine to medium-grained, dark brown.						NR
5			■	▨	7/7/13	4	101	se, ca, er ds
				▨	9/11/11			NR
10		**SAND (SP):** fine to medium-grained, trace silt, brown.	■		9/13/17	1	99	
15			■		10/14/18	2	102	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/18/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-3

Log of Boring No. BH-03

Dates Drilled: 9/17/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 186 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6.5" Asphalt Concrete/6" Concrete						
		ALLUVIUM **SILTY SAND (SM):** fine to medium-grained, dark brown.	■	▨	3/2/2	10	98	r, ma, max
5		**SAND (SP):** fine to coarse-grained, trace silt, light brown.	■		7/9/11	2	94	
			■		6/16/16	2	92	
10		**SILTY SAND (SM):** fine to medium-grained, brown.	■		5/6/3	6	97	
15		**SAND (SP):** fine to coarse-grained, trace silt, brown.	■		7/14/26	4	102	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/17/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-4

Log of Boring No. BH-04 (Bore and Jack)

Dates Drilled: 9/17/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 189 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/8" Aggregate Base						
		UNDOCUMENTED FILL **SILTY SAND (SM):** fine to coarse-grained, scattered gravel up to 0.5" in largest dimension, dark brown. - concrete 3 to 4"	■	▨	6/7/50-4"	7	112	
5		**SAND with SILT (SP-SM):** fine to coarse-grained, light brown.	■		12/12/14	2	100	
			■		10/14/18	3	93	ds
10			■		6/12/18	2	105	
15			■		14/20/12	3	101	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/17/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-5

Log of Boring No. BH-05 (Bore and Jack)

Dates Drilled: 9/17/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 189 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/14" Aggregate Base						
		ALLUVIUM **SILTY SAND (SM):** fine to medium-grained, scattred gravel up to 0.5" in largest dimension, dark brown.	■		3/7/3	10	91	
5			■		3/4/6	8	93	
		SAND with SILT (SP-SM): fine to coarse-grained, light brown.		▨				ca, er, ma
			■	▨	5/8/10	1	94	
10			■		5/14/17	2	98	
15		**SILTY SAND (SM):** fine to coarse-grained, brown.	■		9/13/10	8	107	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/17/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-6

Log of Boring No. BH-06 (Bore and Jack)

Dates Drilled: 9/14/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 195 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6.5" Asphalt Concrete/8" Aggregate Base						
		ALLUVIUM **SANDY CLAY (CL):** fine to medium-grained sand, dark brown.	■		3/6/9	20	102	
5			■		2/5/8	21	105	
		SAND with SILT (SP-SM): fine to coarse-grained, scattered gravel up to 1" in largest dimension, brown.	■		5/8/10	4	100	
10			■	▨	12/13/24	4	109	se
15			■	▨	19/36/50-5"	3	110	ds
20			⊠		5/6/10			
		End of boring at 21.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/14/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-7

Log of Boring No. BH-07 (Bore and Jack)

Dates Drilled: 9/14/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 200 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/10" Aggregate Base						
		ALLUVIUM **SANDY SILT (ML):** fine to coarse-grained, dark brown.	■		4/7/10	13	118	
5		- scattered gravel up to 1" in largest dimension	■		8/9/13	13	108	
			■		3/5/7	11	117	
10		**GRAVELLY SAND (SP):** fine to coarse-grained, some gravel up to 2" in largest dimension, scattered cobbles up to 3" in largest dimension,.	■		40/19/25	2	124	
15		**SAND with SILT (SP-SM):** fine to coarse-grained, few gravel up to 0.5" in largest dimension, trace clay, light brown.	■	▨	5/13/34	12	112	ca, er, ma
20			☒	▨	15/22/29			
		End of boring at 21.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/14/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-8

Log of Boring No. BH-08

Dates Drilled: 9/14/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 196 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/6" Aggregate Base						
		ALLUVIUM **SILTY SAND (SM):** fine to coarse-grained, few gravel up to 1" in largest dimension, dark brown.	■	▨	5/9/8	7	122	se, r
5			■		2/4/9	8	121	
			■		9/11/12	9	117	
10		- brown	■	▨	12/18/18	8	105	ds max
15		**SAND with SILT (SP-SM):** fine to coarse-grained, brown.	■		4/20/50-5"	2	123	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/14/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-9

Log of Boring No. BH-09

Dates Drilled: 9/17/2018 Logged by: Michael Maldonado Checked By: James Burnham

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 213 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS	MOISTURE	DRY UNIT WT. (pcf)	OTHER
		6" Asphalt Concrete/10" Concrete Base/6" Aggregate Base						
		ALLUVIUM **SILTY SAND (SM):** fine to medium-grained, brown.	■		13/17/23	9	108	
5		- few gravel up to 0.5" in largest dimension	■	▨	8/16/30	2	106	se, ca, er, ma
			■	▨	9/30/42	7	112	
10		**SAND with SILT (SP-SM):** fine to coarse-grained, brown.	■		14/38/50-5"	2	117	
15			■		9/25/50-5"	2	104	
		End of boring at 16.5 feet bgs. No groundwater encountered. Borehole backfilled with soil cuttings, tamped and surface patched with asphalt concrete on 9/17/18.						

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. 18-32-102-01

Drawing No. A-10

Appendix B

Laboratory Testing Program

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their physical properties and engineering characteristics. The amount and selection of tests were based on the geotechnical parameters required for this project. Test results are presented herein and on the Logs of Borings, in Appendix A, *Field Exploration*. The following is a summary of the various laboratory tests conducted for this project.

***In-Situ* Moisture Content and Dry Density**

In-situ dry density and moisture content tests were performed on relatively undisturbed ring samples in accordance with ASTM Standard D2216 and D7263 test method. This test is used in soil classification and provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

Sand Equivalent

Four representative soil samples were tested in accordance with the ASTM D2419 test method to determine the sand equivalent. The test results are presented in the following table.

Table No. B-1, Sand Equivalent Test Results

Boring No.	Depth (feet)	Soil Description	Sand Equivalent
BH-02	5-10	Silty Sand (SM)	43
BH-06	10-15	Sand with Silt (SP-SM)	49
BH-08	1-5	Silty Sand (SM)	30
BH-09	5-10	Silty Sand (SM)	28

R-value

Two representative bulk soil samples were tested for resistance value (R-value) in accordance with State of California Test CT301. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table.

Table No. B-2, R-Value Test Results

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-03	1-5	Silty Sand (SM)	22

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-08	1-5	Silty Sand (SM)	53

Soil Corrosivity Tests

Four representative soil samples were tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests was to determine the corrosion potential of alignment soils when placed in contact with common construction materials. The test was performed by AP Engineering and Testing, Inc. (Pomona, CA) in accordance to California Tests 643, 422 and 417. Test result is presented in the following table.

Table No. B-3, Summary of Soil Corrosivity Test Results

Boring No.	Depth (feet)	pH	Soluble Sulfates (CA 417) (% by weight)	Soluble Chlorides (CA 422) (ppm)	Min. Resistivity (CA 643) (Ohm-cm)
BH-02	5-10	9.2	0.004	32	9,981
BH-05	5-10	8.5	0.006	35	7,549
BH-07	15-20	8.9	0.004	32	14,730
BH-09	5-10	9.1	0.005	32	4,225

Grain-Size Analyses

To assist in classification of soils, mechanical grain-size analysis was performed on five select samples in accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

Maximum Density and Optimum Moisture Content Tests

Laboratory maximum dry density-optimum moisture content relationship test was performed on two representative bulk soil samples. These tests were conducted in accordance with the ASTM Standard D1557 test method. The test results are presented in Drawing No. B-2, *Moisture-Density Relationship Results,* and are summarized in the following table.

Table No B-4, Summary of Moisture-Density Relationship Results

Boring No.	Depth (feet)	Soil Description	Optimum Moisture (%)	Maximum Density (pcf)
BH-03	1-5	Silty Sand (SM), Dark Brown	10.5	126.0
BH-08	10-15	Silty Sand (SM), Brown	7.0	133.0

Direct Shear Tests

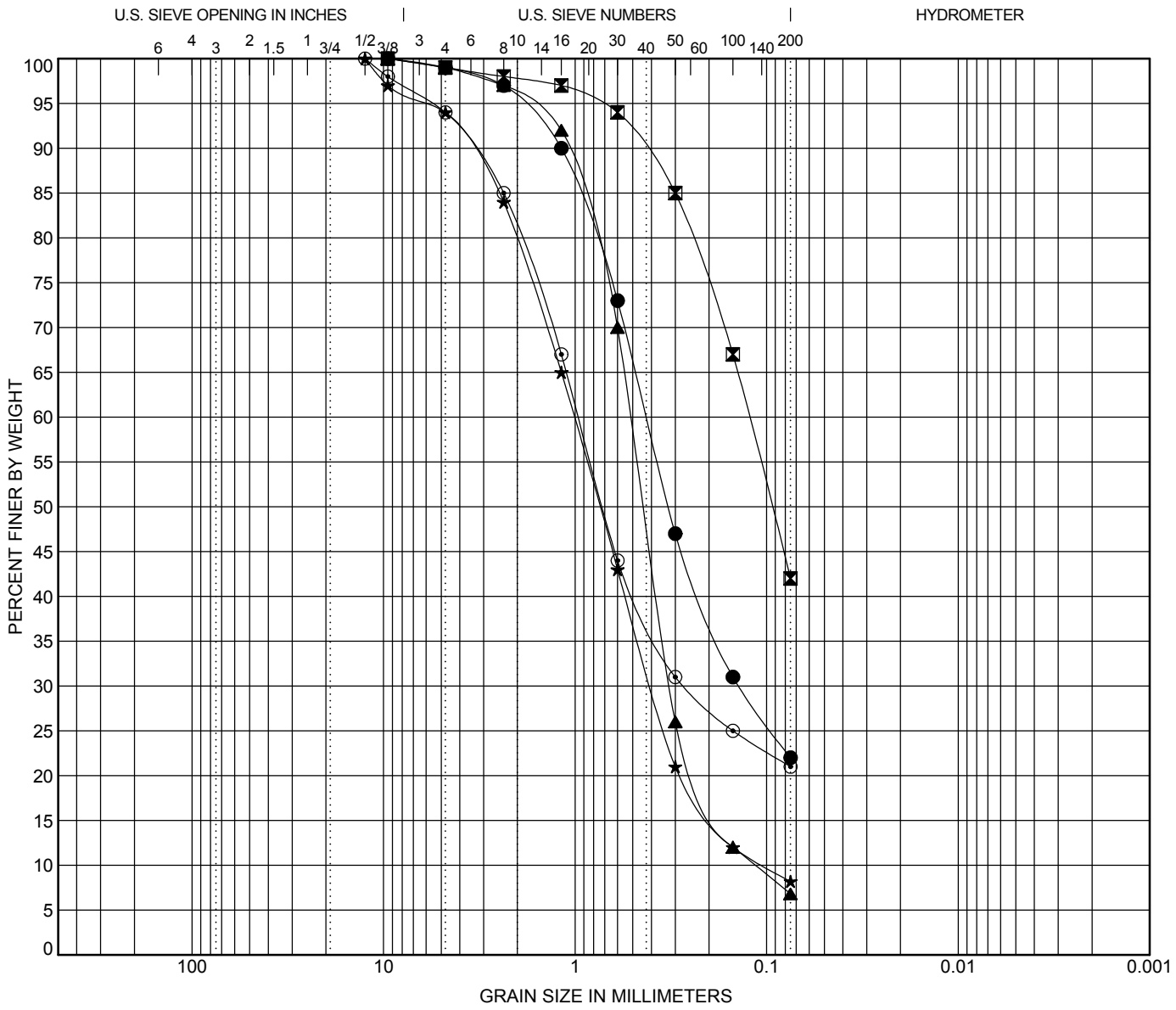
Four direct shear tests were performed on relatively undisturbed samples in accordance with ASTM Standard D3080 under soaked moisture condition. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.02 inch/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawings No. B-3 through B-6*, Direct Shear Test Results,* and the following table.

Table No. B-5, Summary of Direct Shear Test Results

Boring No.	Depth (feet)	Soil Description	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-02	5.0-6.5	Silty Sand (SM)	27	80
BH-04	7.5-9.0	Sand with Silt (SP-SM)	27	110
BH-06	15.0-16.5	Sand with Silt (SP-SM)	32	20
BH-08	10.0-11.5	Silty Sand (SM)	33	30

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH-01	3-7	SILTY SAND (SM)					
⊠	BH-03	1-5	SILTY SAND (SM)					
▲	BH-05	6.5-10	SAND with SILT (SP-SM)				1.73	4.46
★	BH-07	15-20	SAND with SILT (SP-SM), Few Gravel				1.51	9.72
⊙	BH-09	5-10	SILTY SAND (SM), Few Gravel					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH-01	3-7	9.5	0.424	0.139		1.0	77.0	22.0	
⊠	BH-03	1-5	9.5	0.124			1.0	57.0	42.0	
▲	BH-05	6.5-10	9.5	0.513	0.32	0.115	1.0	92.2	6.8	
★	BH-07	15-20	12.5	1.012	0.398	0.104	6.0	85.8	8.2	
⊙	BH-09	5-10	12.5	0.96	0.267		6.0	73.0	21.0	

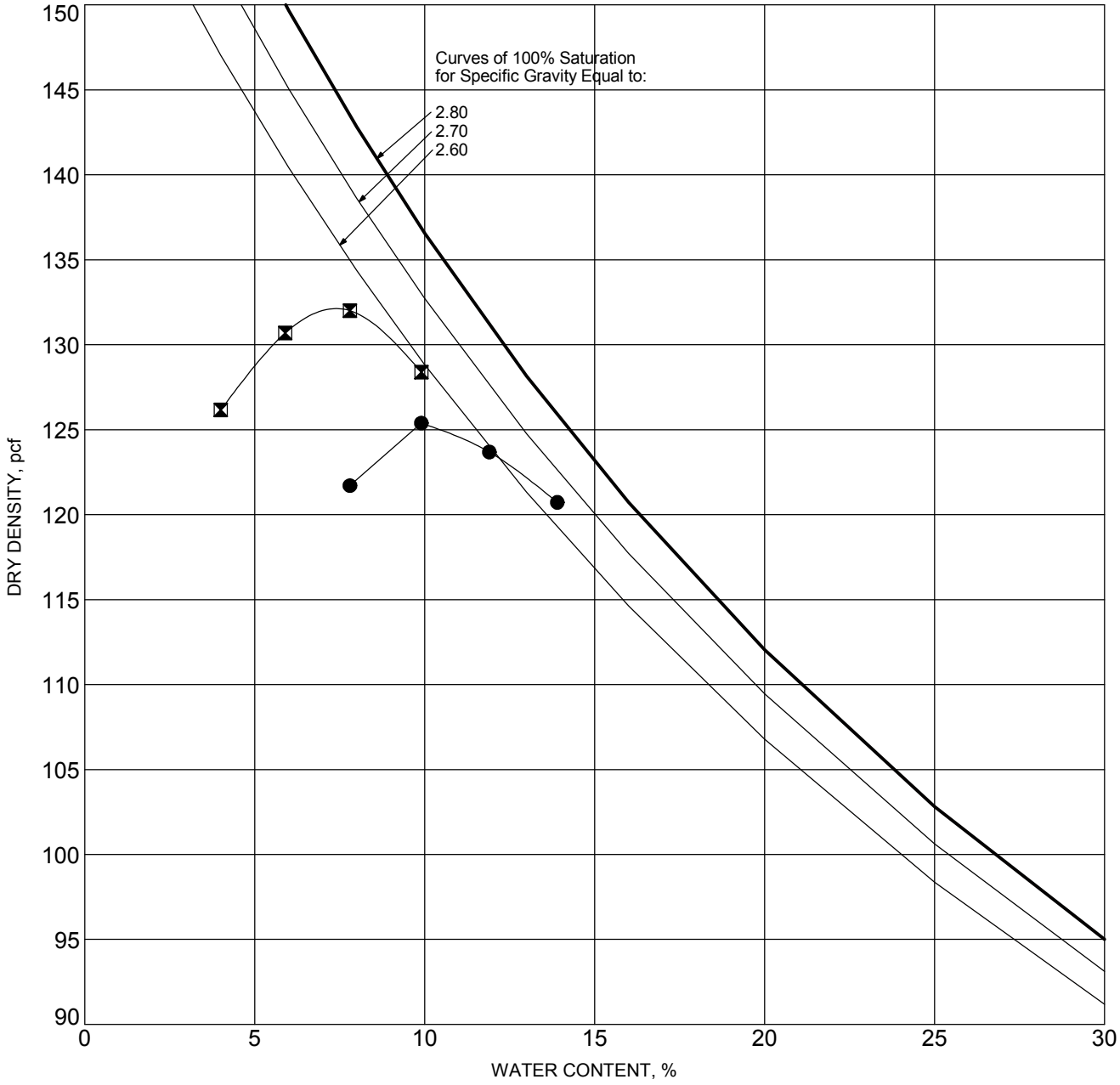
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-1**



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	**BH-03**	**1-5**	**SILTY SAND (SM), Dark Brown**	**D1557- A**	**10.5**	**126.0**
⊠	**BH-08**	**10-15**	**SILTY SAND (SM), Brown**	**D1557- A**	**7.0**	**133.0**

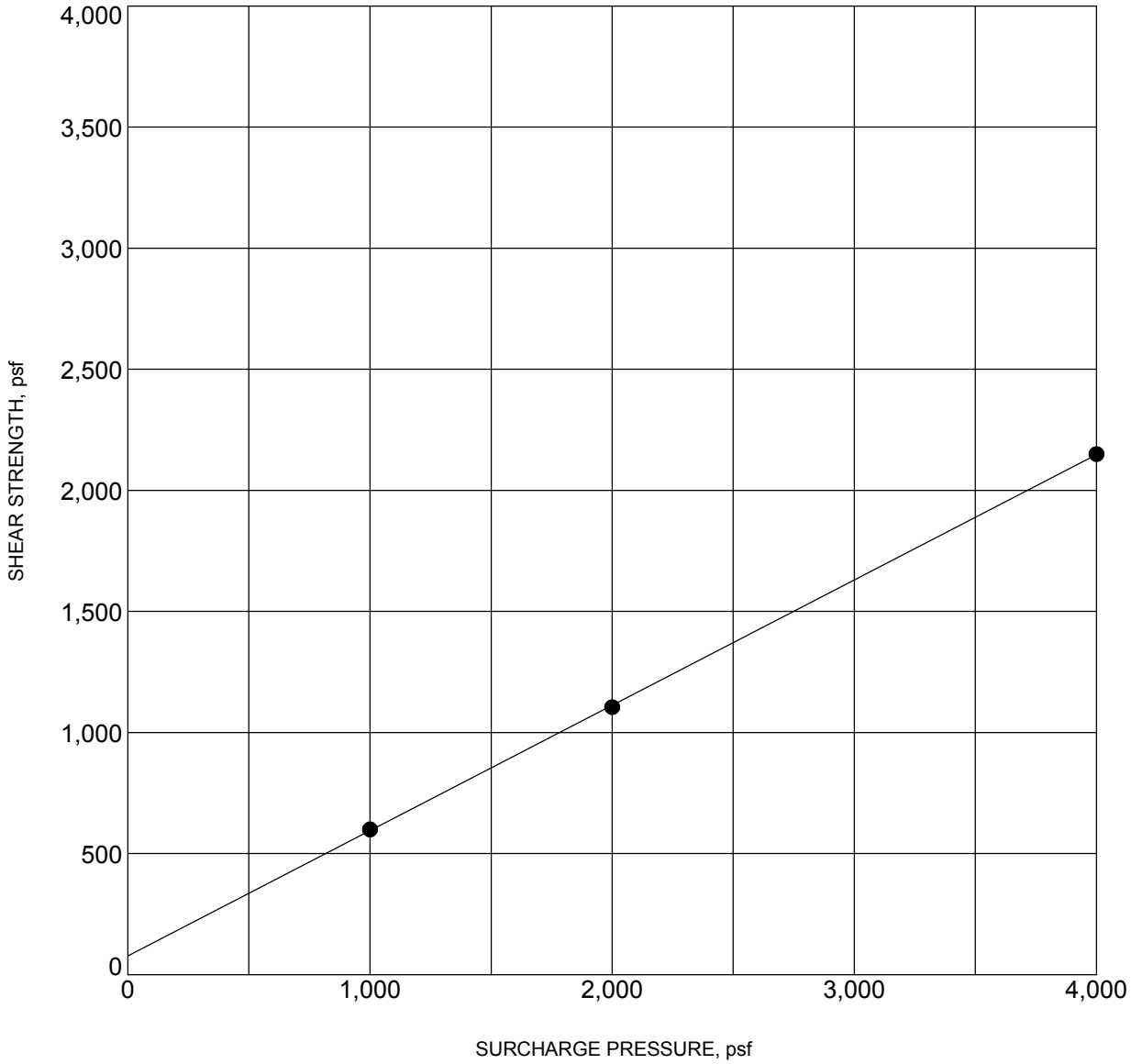
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-2**



BORING NO.	:	**BH-02**	DEPTH (ft)	:	**5.0-6.5**
DESCRIPTION	:	**SILTY SAND (SM)**			
COHESION (psf)	:	**80**	FRICTION ANGLE (degrees):		**27**
MOISTURE CONTENT (%)	:	**4.0**	DRY DENSITY (pcf)	:	**101.1**

NOTE: Ultimate Strength.

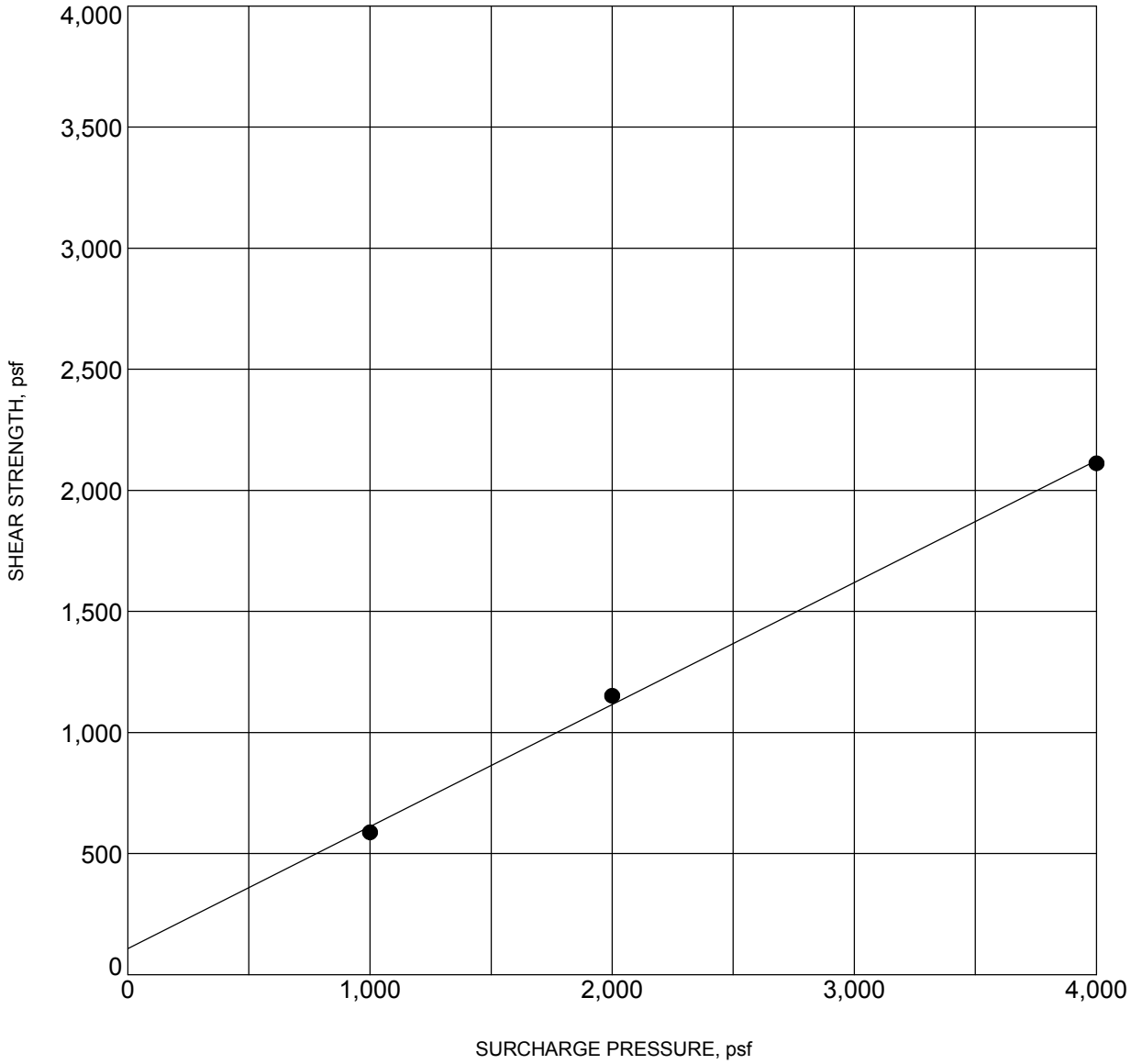
DIRECT SHEAR TEST RESULTS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-3**



BORING NO.	:	**BH-04**	DEPTH (ft)	:	**7.5-9.0**
DESCRIPTION	:	**SAND with SILT (SP-SM)**			
COHESION (psf)	:	**110**	FRICTION ANGLE (degrees):		**27**
MOISTURE CONTENT (%)	:	**3.0**	DRY DENSITY (pcf)	:	**90.0**

NOTE: Ultimate Strength.

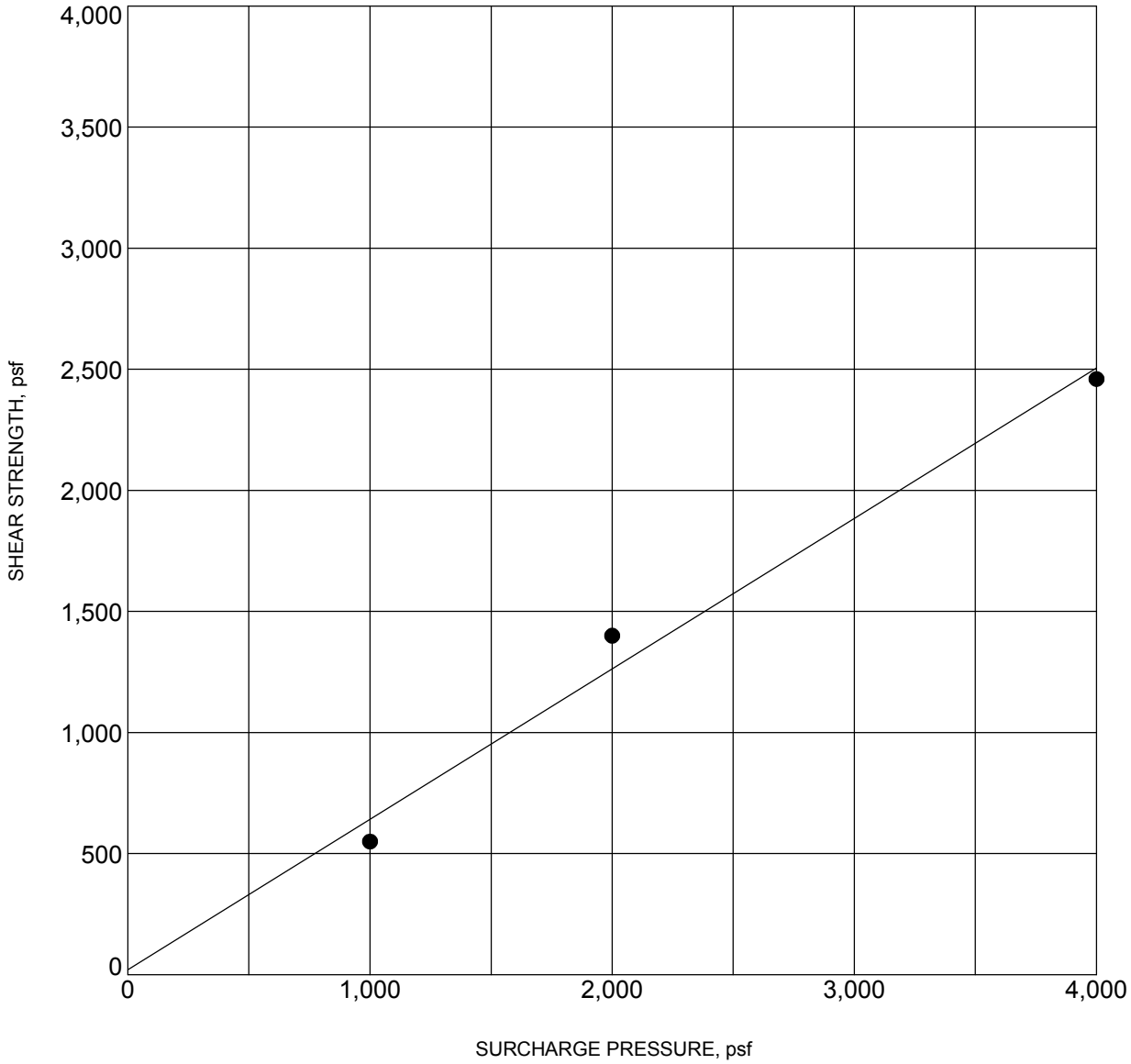
DIRECT SHEAR TEST RESULTS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-4**



BORING NO.	:	**BH-06**	DEPTH (ft)	:	**15.0-16.5**
DESCRIPTION	:	**SAND with SILT (SP-SM)**			
COHESION (psf)	:	**20**	FRICTION ANGLE (degrees):		**32**
MOISTURE CONTENT (%)	:	**3.0**	DRY DENSITY (pcf)	:	**112.9**

NOTE: Ultimate Strength.

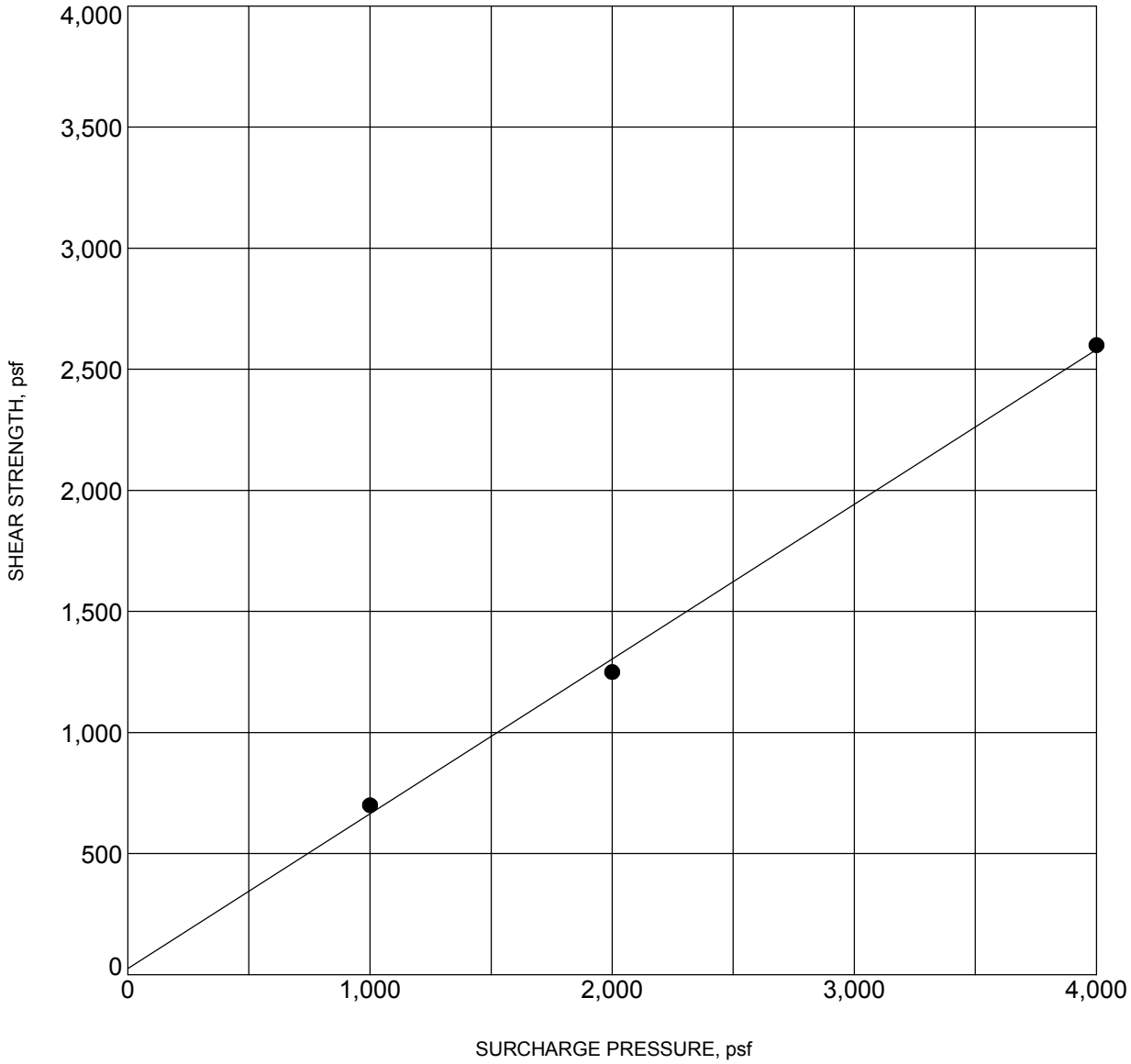
DIRECT SHEAR TEST RESULTS

Converse Consultants

Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-5**



BORING NO.	:	**BH-08**	DEPTH (ft)	:	**10.0-11.5**
DESCRIPTION	:	**SILTY SAND (SM)**			
COHESION (psf)	:	**30**	FRICTION ANGLE (degrees):		**33**
MOISTURE CONTENT (%)	:	**7.8**	DRY DENSITY (pcf)	:	**104.5**

NOTE: Ultimate Strength.

DIRECT SHEAR TEST RESULTS

Converse Consultants

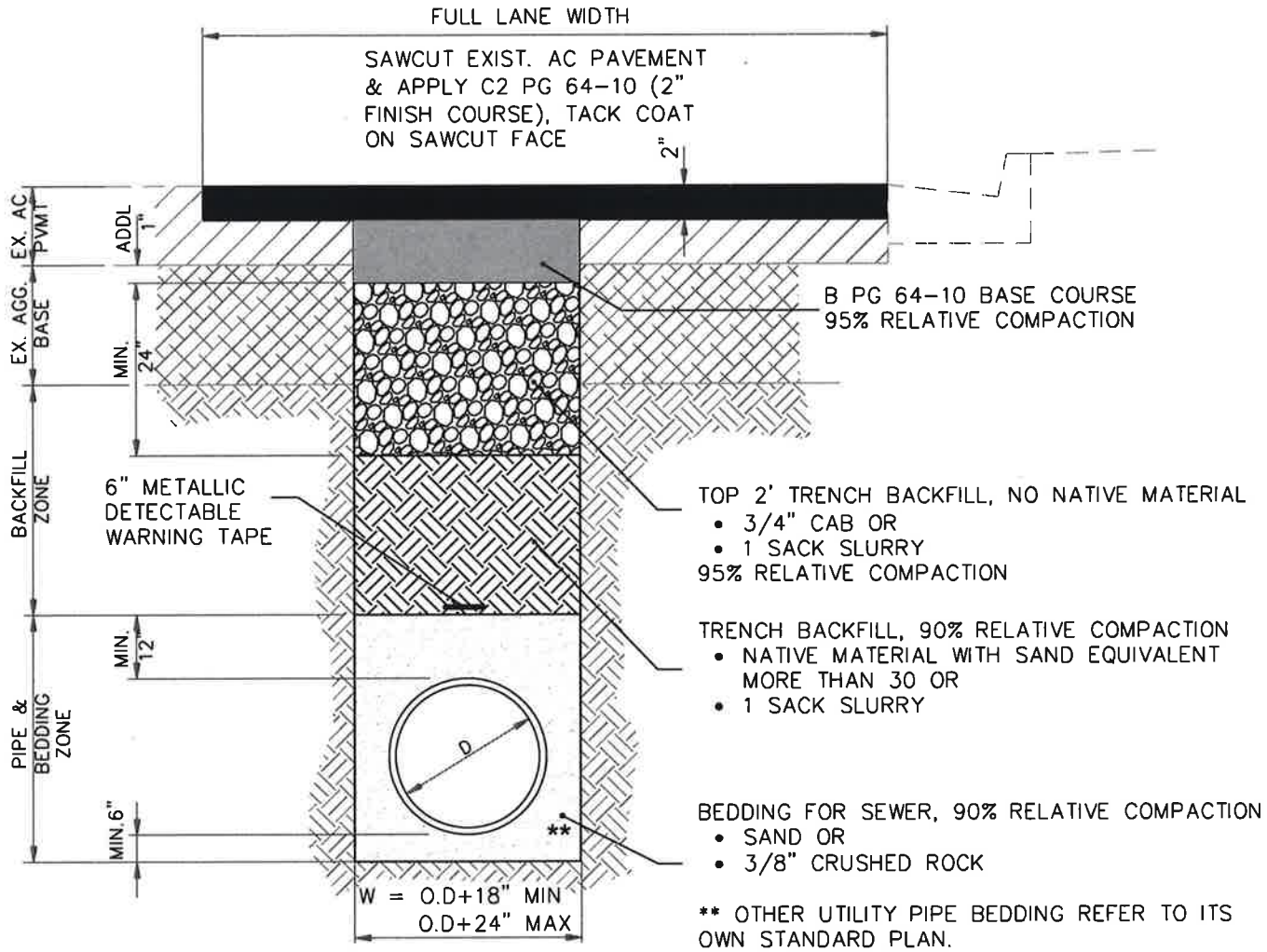
Crowther Sewer Pipeline Project
Approximately 7,300 Linear Feet of 18-inch Diamter Pipeline
Along W. Crowther Ave., S. Placentia Ave. and E. Orangethorpe Ave.
Cities of Placentia and Fullerton, Orange County, California
For: Dudek

Project No. **18-32-102-01**

Drawing No. **B-6**

Appendix C

Pipe Bedding & Trench Backfill



1. Sawcutting shall be accomplished by the use of a power driven saw. The depth of the cut shall be deep enough to provide a clean, straight break without loosening, cracking, or damaging adjoining asphalt or concrete.
2. All compaction of trench backfill materials shall be accomplished by mechanical methods, jetting, ponding or flooding in lieu of mechanical methods shall not be allowed.
3. Permanent pavement resurfacing shall be "T-cut" extended for full travel lane pavement with 2 inches thick final cap. At both ends of utility trench opening, grinding shall be extended a minimum of 12 inches beyond trench end.
4. Permanent pavement resurfacing shall be accomplished within 7 days after backfilling of trenches has been completed.
5. Cold milling of 2 inches shall be required for all trenches. the public works inspector will require additional cold milling if field conditions so warrant.
6. All trenches shall be backfilled and a minimum of 2" thick temporary asphalt pavement installed at the end of each work day. At major street and intersections, a greater thickness is required as determined by City Engineer. The public works inspector may authorize steel plate bridging in lieu of temporary asphalt pavement.
7. Compaction reports for trench backfill shall be submitted to the City Engineer.

Date: 08/26/2016		NOT TO SCALE	
PREPARED BY		YOUNG PARK, PE	
REV.	BY	APPROVED	DATE

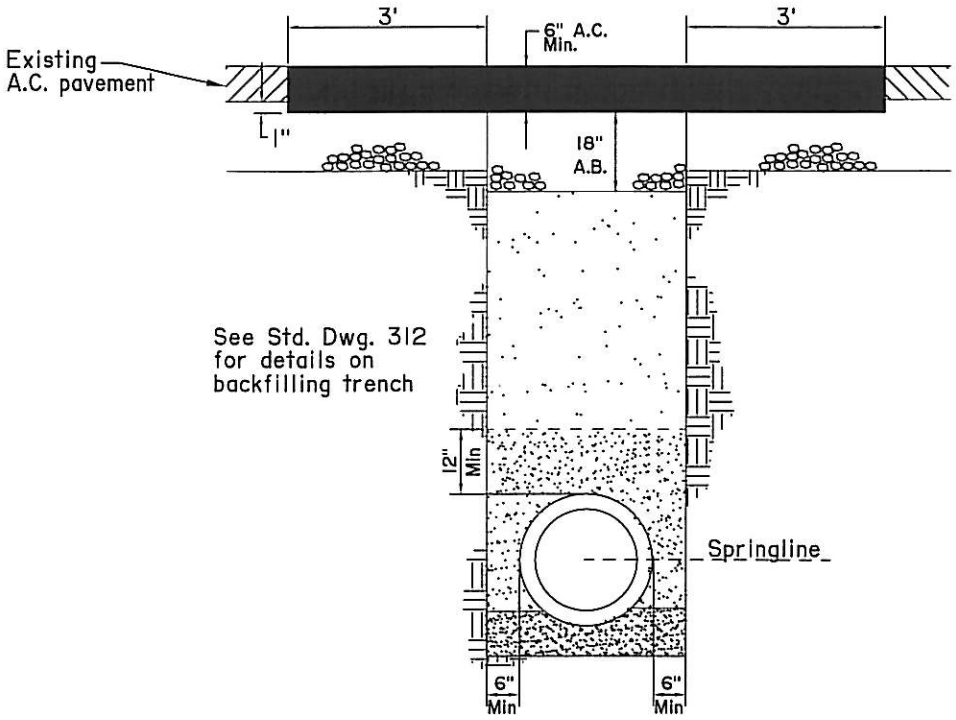
CITY OF PLACENTIA - PUBLIC WORKS

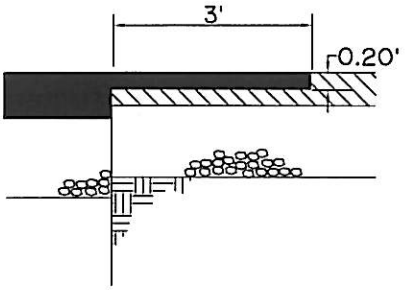
SEWER PIPE TRENCH BACKFILL AND PAVEMENT RESURFACING

APPROVED

LUIS ESTEVEZ
DIRECTOR OF PUBLIC WORKS

STD. DWG.
ST - 1
LONGITUDINAL





OPTION
PER CITY APPROVAL
IF EXISTING STRUCTURAL
SECTION FOR A.C.
IS MORE THAN 4".

NOTES

1. All open-cut pipe installation crossing arterial streets will require special approval by the Director of Engineering.
2. Unless otherwise approved by the Engineering Department, all utilities crossing arterial streets shall be constructed by jacking or approved boring method. No open transverse utility cuts are permitted.
3. Traffic control to be approved by the City of Fullerton Traffic Engineer prior to any excavation.
4. Existing pavement shall be sawcut 2" deep minimum.
5. An additional 3 foot wide strip on both sides of the trench shall be removed and repaved. OPTION-In lieu of A.C. removal, existing A.C. may be cold planed a minimum depth of 0.20'.
6. The roadway structural section shall be replaced with 18" crushed aggregate base compacted to 95% relative compaction and an A.C. section 1" thicker than the existing section or 6" minimum A.C., whichever is greater.
7. Slurry is not a permitted backfill material.
8. The final A.C. cap shall be placed with a self-propelled paving machine or an approved paving device.
9. Asphalt mix design for the base course shall be Type III/B-2-PG 64-10 (3/4" Course) and the surface course shall be Type III/C2-PG 64-10 (1/2" Course), or as approved by the City.
10. Telephone, Cable T.V., Electrical conduits and wirings, and Gas Mains shall be a minimum of 36" below grade. Utilities in the parkway shall be a minimum 30" below the flow line of the curb and gutter.
11. All sewer and storm drain lines shall be video inspected in addition to other testing required per the Standard Specifications for Public Works. (Ball and flush line shall be at no cost to the city.)

REVISED	CITY OF FULLERTON ENGINEERING DEPARTMENT	DRAWN P.L.S.
DATE 5/8/97 1/10/02 4/28/09	ARTERIAL STREET PIPE TRENCH BEDDING AND BACKFILL	DATE 8/1/95 STD. NO. 313
	APPROVED [signature] DATE 5-12-09 DIRECTOR OF ENGINEERING	

APPENDIX E

Noise

APPENDIX E-1

Field Noise Measurement Data Sheets

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: CROWTHER AVE — PROJECT #: 11113
SITE ID:
SITE ADDRESS:
OBSERVER(S): PEXE VITAN
START DATE: 12/18/18 — END DATE: 12/18/18
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS

TEMP: 60 F — HUMIDITY: 81 % R.H. — WIND: (CALM) LIGHT MODERATE
WINDSPD: MPH — DIR. N NE E SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT: PICCOLO SLM-3 — TYPE 1 (2) — SERIAL # 309270 46
CALIBRATOR: BSVA CA 114 — SERIAL # 490 151
CALIBRATION CHECK — PRE-TEST: dBA SPL — POST-TEST: dBA SPL — WINDSCRN: YES

SETTINGS: A-WTD (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M1 1-2	9:41	9:56	77.6	88.4	64.0				

COMMENTS: READING TAKEN ALONGSIDE 807 W. ROBIN AVE (RESIDENTIAL TRAILER), AT SIDEWALK WITH ORANGETHORPE AVE; PRIMARY NOISE SOURCE IS TRAFFIC ON W. ORANGETHORPE AVE; SECONDARY IS NEARBY CONSTRUCTION NOISE (DRILLS, HAMMERING)

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT — DIST. TO RDWY C/L OR (EOP): 12'
TRAFFIC COUNT DURATION: ___ MIN — SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ___

COUNT 2 (OR RDWY 2)	___ MIN SPEED NB/EB	SB/WB	NB/EB	SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY: 40 MPH ON W. ORANGETHORPE AVE.

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH

TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS: 3179; 3180; 3181; 3182; 3183; 3184; 3186
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: CROWTHER AVE
PROJECT #: 11113
SITE ID:
OBSERVER(S): PETE VIDAL
SITE ADDRESS: NA
START DATE: 12/14/18 END DATE: 12/18/18
START TIME: END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 60 F HUMIDITY: 81 % R.H. WIND: (CALM) LIGHT MODERATE
WINDSPD: MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO SLM TYPE 1 (2) SERIAL # 1309270046
CALIBRATOR: B&K CA 114 SERIAL # 490 151
CALIBRATION CHECK: PRE-TEST ____ dBA SPL POST-TEST ____ dBA SPL WINDSCRN YES

SETTINGS: A-WTD (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(M2) 3-4	10:18	10:33	73.6	84.4	55.7				

COMMENTS: READING TAKEN IN FRONT OF 770 S. PLACENTIA AVE (LAW OFFICE PANTO); PRIMARY NOISE SOURCE IS TRAFFIC ON PLACENTIA AVE;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR (EOP): 30'

TRAFFIC COUNT DURATION: ____ MIN SPEED ____ MIN SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

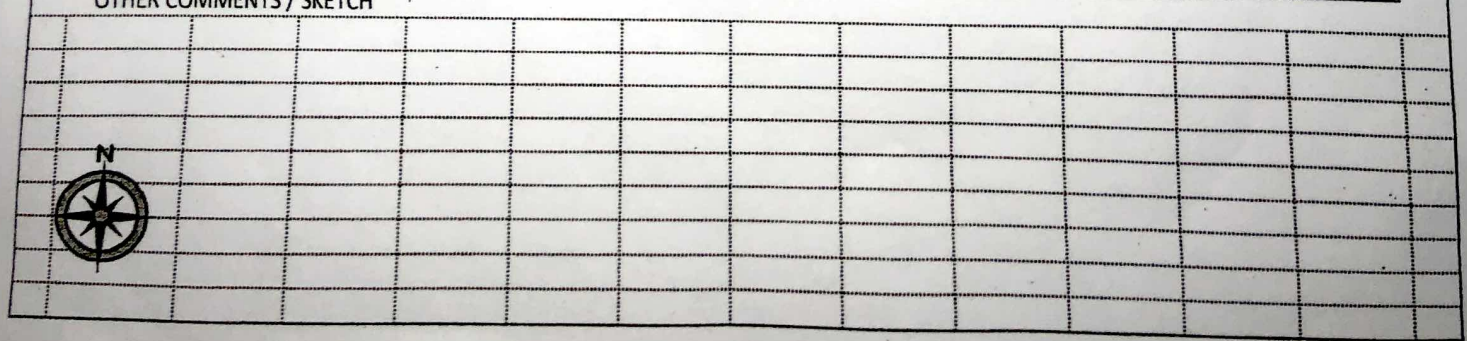
IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ____

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB	SB/WB

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER:

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 3189; 3190; 3191; 3192
OTHER COMMENTS / SKETCH



DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: CROWTHER AVE
PROJECT #: 11113
SITE ID:
SITE ADDRESS:
OBSERVER(S): PETE VIJAR
START DATE: 12/18/18 END DATE: 12/18/18
START TIME: END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 63 F HUMIDITY: 67 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE STEADY GUSTY
WINDSPD: MPH DIR. N NE S SE S SW W NW
SKY: (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO TYPE 1 (2) SERIAL # 13092704G
CALIBRATOR: BSWA CA 114 SERIAL # 490151
CALIBRATION CHECK: PRE-TEST ____ dBA SPL POST-TEST ____ dBA SPL WINDSCRN YES

SETTINGS: A-WTD (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
M3 S-6	10:51	11:06	75.9	89.8	62.0				

COMMENTS: READING TAKEN IN FRONT OF 413 N CROWTHER AVE (RESIDENTIAL); PRIMARY NOISE SOURCE IS TRAFFIC ON N CROWTHER AVE;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR EOP: 19'
TRAFFIC COUNT DURATION: ____ MIN SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
AUTOS				
MED TRKS				
HVY TRKS				
BUSES				
MOTRCLS				

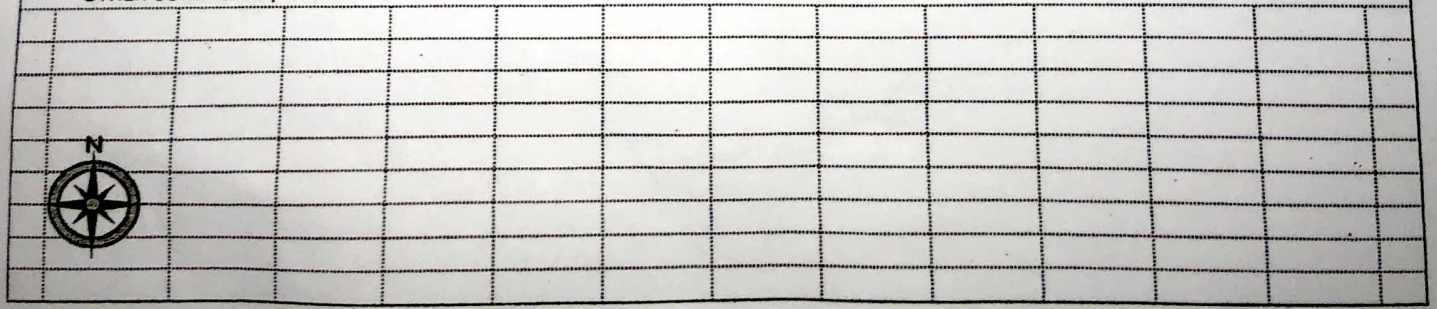
IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ____

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING (DIST. TRAFFIC (LIST RDWYS BELOW)) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: AUDIBLE NOISE FROM 57 FREEWAY

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 3194; 3195; 3196; 3197; 3198
OTHER COMMENTS / SKETCH



DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: CROWTHER AVE | PROJECT #: 11113
SITE ID: | OBSERVER(S): PEYE VIVAR
SITE ADDRESS:
START DATE: 12/18/18 | END DATE: 12/18/18
START TIME: | END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 63 F | HUMIDITY: 67 % R.H. | WIND: (CALM) LIGHT MODERATE VARIABLE STEADY GUSTY
WINDSPD: MPH | DIR. N NE S SE S SW W NW
SKY: (SUNNY) CLEAR OVRCAST (PRTLY CLDY) FOG | RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO | TYPE 1 (2) | SERIAL # 130927046
CALIBRATOR: B&K CAL 114 | SERIAL # 490151
CALIBRATION CHECK: PRE-TEST _____ dBA SPL | POST-TEST _____ dBA SPL | WINDSCRN YES

SETTINGS: A-WTD (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(M4) 78	11:08	11:23	75.1	87.3	60.7				

COMMENTS: READING TAKEN IN FRONT OF 405 W. CROWTHER AVE (RESIDENTIAL); PRIMARY NOISE SOURCE IS TRAFFIC ON W. CROWTHER AVE;

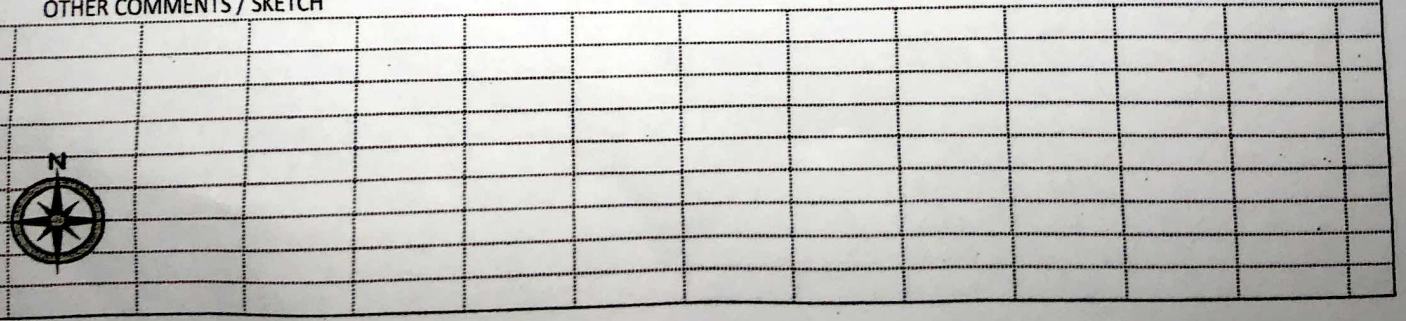
SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT | DIST. TO RDWY C/L OR EOP: 23'
TRAFFIC COUNT DURATION: ___ MIN

COUNT 1 (OR RDWY 1)	DIRECTION	SPEED NB/EB	SPEED SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	SPEED NB/EB	SPEED SB/WB
	AUTOS						
	MED TRKS						
	HVY TRKS						
	BUSES						
	MOTRCLS						

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING (DIST. TRAFFIC (LIST RDWYS BELOW)) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: AUDIBLE NOISE FROM 57 FREEWAY

DESCRIPTION / SKETCH
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: 3200; 3201; 3202; 3203; 3204; 3205
OTHER COMMENTS / SKETCH



APPENDIX **E**-2

Construction Noise Modeling
Input and Output

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Receiver 55'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	55	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Concrete Saw	88.8	81.8	N/A	N/A	N/A	N/A	N/A
Total	88.8	81.8	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	200	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Concrete Saw	77.5	70.5	N/A	N/A	N/A	N/A	N/A
Total	77.5	70.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Trenching

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 55'	Residential	65	60	55

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator		No	40		80.7	55	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		79.9	75.9	N/A	N/A	N/A	N/A	N/A
	Total	79.9	75.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

		---- Receptor #2 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

			Equipment				
			Spec	Actual	Receptor	Estimated	
		Impact	Lmax	Lmax	Distance	Shielding	
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator		No	40		80.7	200	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		68.7	64.7	N/A	N/A	N/A	N/A	N/A
	Total	68.7	64.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Pipeline Installation

		---- Receptor #1 ----		
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night

Nearest Receiver 55'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	55	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Man Lift	73.9	66.9	N/A	N/A	N/A	N/A	N/A
Total	73.9	66.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Man Lift	62.7	55.7	N/A	N/A	N/A	N/A	N/A
Total	62.7	55.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Backfill and Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 55'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator	No	40		80.7	55	0
Compactor (ground)	No	20		83.2	55	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		79.9	75.9	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		82.4	75.4	N/A	N/A	N/A	N/A	N/A
	Total	82.4	78.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	200	0
Compactor (ground)	No	20		83.2	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		68.7	64.7	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		71.2	64.2	N/A	N/A	N/A	N/A	N/A
	Total	71.2	67.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 55'	Residential	65	60	55

Equipment

Description	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Roller	No	20		80	55	0
Roller	No	20		80	55	0

Results

Equipment	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Roller	79.2	72.2	N/A	N/A	N/A	N/A	N/A
Roller	79.2	72.2	N/A	N/A	N/A	N/A	N/A
Total	79.2	75.2	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Roller	No	20		80	200	0
Roller	No	20		80	200	0

Results

Equipment	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Roller	68	61	N/A	N/A	N/A	N/A	N/A
Roller	68	61	N/A	N/A	N/A	N/A	N/A
Total	68	64	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Open Trenching_Architectural Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Receiver 55'	Residential	65	60	55

Equipment

	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Compressor (air)	No	40		77.7	55	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)		76.8	72.9	N/A	N/A	N/A	N/A	N/A
	Total	76.8	72.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)		65.6	61.6	N/A	N/A	N/A	N/A	N/A
	Total	65.6	61.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	100	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Concrete Saw	83.6	76.6	N/A	N/A	N/A	N/A	N/A
Total	83.6	76.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	200	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Concrete Saw	77.5	70.5	N/A	N/A	N/A	N/A	N/A
Total	77.5	70.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Trenching

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	100	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		74.7	70.7	N/A	N/A	N/A	N/A	N/A
	Total	74.7	70.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	200	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		68.7	64.7	N/A	N/A	N/A	N/A	N/A
	Total	68.7	64.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Pipeline Installation

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night

Nearest Receiver 100'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Man Lift	68.7	61.7	N/A	N/A	N/A	N/A	N/A
Total	68.7	61.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Man Lift	62.7	55.7	N/A	N/A	N/A	N/A	N/A
Total	62.7	55.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Backfill and Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 100'	Residential	65	60	55

Description	Equipment Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator	No	40		80.7	100	0
Compactor (ground)	No	20		83.2	100	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		74.7	70.7	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		77.2	70.2	N/A	N/A	N/A	N/A	N/A
	Total	77.2	73.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	200	0
Compactor (ground)	No	20		83.2	200	0

Results

		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator		68.7	64.7	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		71.2	64.2	N/A	N/A	N/A	N/A	N/A
	Total	71.2	67.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Nearest Receiver 100'	Residential	65	60	55

Equipment

	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Roller	No	20		80	100	0
Roller	No	20		80	100	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Roller		74	67	N/A	N/A	N/A	N/A	N/A
Roller		74	67	N/A	N/A	N/A	N/A	N/A
	Total	74	70	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Roller	No	20		80	200	0
Roller	No	20		80	200	0

Results

Equipment		Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Roller		68	61	N/A	N/A	N/A	N/A	N/A
Roller		68	61	N/A	N/A	N/A	N/A	N/A
	Total	68	64	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/20/2018
Case Description: Crowther Pipeline Trenchless Tunneling_Architectural Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Receiver 100'	Residential	65	60	55

Equipment

Description	Spec	Actual	Receptor	Estimated

Description	Impact Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Compressor (air)	No	40		77.7	100	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)	71.6	67.7	N/A	N/A	N/A	N/A	N/A
Total	71.6	67.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Typical Receiver 200'	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	200	0

Results

	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Compressor (air)	65.6	61.6	N/A	N/A	N/A	N/A	N/A
Total	65.6	61.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.