Draft Initial Study/Mitigated Negative Declaration

Roscoe Trunk Line Replacement Project

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March 2022

CEQA Initial Study and Mitigated Negative Declaration

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Table of Contents

TECHNICAL APPENDICES

List of Figures

List of Tables

Acronyms and Abbreviations

AB	Assembly Bill
APE	Area of Potential Effect
AQMP	Air Quality Management Plan
BERD	California State Built Environment Resource Directory
BMP	Best Management Practice
BSA	Biological Survey Area
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Ranks
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel scale
EIR	Environmental Impact Report
ERDIP	earthquake resistant ductile iron pipe
FESA	federal Endangered Species Act
FP	Fully Protected
FTA	Federal Transit Administration
GHG	Greenhouse Gas Emissions
HDPE	high-density polyethylene
HRI	Historic Resources Inventory
IPaC	Information for Planning and Consultation
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
L_{eq}	Equivalent Noise Level
LAHCM	Los Angeles Historic Cultural Monument
LAMC	Los Angeles Municipal Code
LAPD	Los Angeles Police Department
LST	Localized Significance Threshold
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MTBM	microtunneling boring machine
$MTCO_2e$	metric tons of carbon dioxide equivalents
NO_X	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OHP	California Office of Historic Preservation
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter

PM_{10}	particulate matter 10 microns or less in diameter
PPV	peak particle velocity
PRC	Public Resources Code
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RTLR Project	Roscoe Trunk Line Replacement Project
RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SO_X	sulfur dioxide
SRA	source receptor area
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VdB	vibration velocity decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled
VOC	volatile organic compounds
WL	Watch List
WSP	welded steel pipe
ZIMAS	City of Los Angeles Zoning Information and Map Access System

CHAPTER 1
PROJECT DESCRIPTION

1.1 Overview of the Project

The Los Angeles Department of Water and Power (LADWP) proposes to replace approximately 21,000 linear feet of the existing Roscoe Trunk Line (the Roscoe Trunk Line Replacement [RTLR] Project, also referred to herein as the project or proposed project). The RTLR would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from Mason Avenue on the west to Louise Avenue of the east, in the west San Fernando Valley area of the City of Los Angeles. The proposed project would also include approximately 18,000 linear feet of a new 16-inch diameter distribution mainline, approximately 2,300 linear feet of 12-inch diameter replacement distribution mainline, and two new pressure regulating stations. All these proposed facilities would be located underground within the road right-of-way.

1.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA; California Public Resources Code Section 21000 et seq.) applies to proposed projects initiated by, funded by, or requiring discretionary approvals from state or local government agencies. The proposed project constitutes a project as defined by CEQA. The CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) Section 15367 states that lead agency "means the public agency which has the principal responsibility for carrying out or approving a project." Therefore, as a municipal utility with discretionary approval authority for the proposed project, LADWP is the lead agency responsible for compliance with CEQA.

As the CEQA lead agency, LADWP must complete an environmental review to determine if implementation of the proposed project would result in significant adverse environmental impacts and to propose measures, as feasible, to eliminate or reduce any such identified impacts. LADWP has prepared a CEQA Initial Study to assist in making this determination. Based on the nature and scope of the proposed project and the evaluation contained in the Initial Study environmental checklist (included herein), LADWP, as the lead agency, has concluded that a Mitigated Negative Declaration (MND) is the proper level of CEQA environmental documentation for the project. The Initial Study shows that impacts caused by the proposed project are either less than significant or significant but mitigable to a less than significant level with incorporation of appropriate mitigation measures as defined herein. This conclusion is supported by CEQA Guidelines Section 15070, which states that an MND can be prepared when:

> the initial study identifies potentially significant effects, but (1) revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and (2) there is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

1.3 Project Location and Setting

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles (Figure 1). The replacement trunk line would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from approximately Mason Avenue on the west to Louise

Avenue on the east, a distance of approximately 21,000 feet. In the area of the project, Roscoe Boulevard, an east-west thoroughfare, forms the boundary between the communities of Northridge and Chatsworth to the north and Reseda and Winnetka to the south (Figure 2).

Roscoe Boulevard is classified as a Boulevard II roadway in the City of Los Angeles' Mobility Plan 2035, with a width of approximately 80 feet. It includes two vehicle travel lanes in each direction as well as a continuous center turning lane, which transitions into a left-turn lane at intersections. An additional parking lane is provided on each side of the street, but in the area of the project, parking is prohibited on weekdays between the hours of 4:00 PM and 7:00 PM on the north and south sides of the street and also between 7:00 AM and 9:00 AM on the south side of the street.

Uses along Roscoe Boulevard consist of a mix of single-family and multi-family residential, retail and service commercial, and institutional uses, including schools and the Northridge Hospital Medical Center. While the majority of the project would be located within Roscoe Boulevard, one proposed underground regulating station would be located within Penfield Avenue just north of Roscoe Boulevard, and the proposed 12-inch diameter replacement distribution mainline would be installed in Reseda Boulevard between Roscoe Boulevard and Bryant Street.

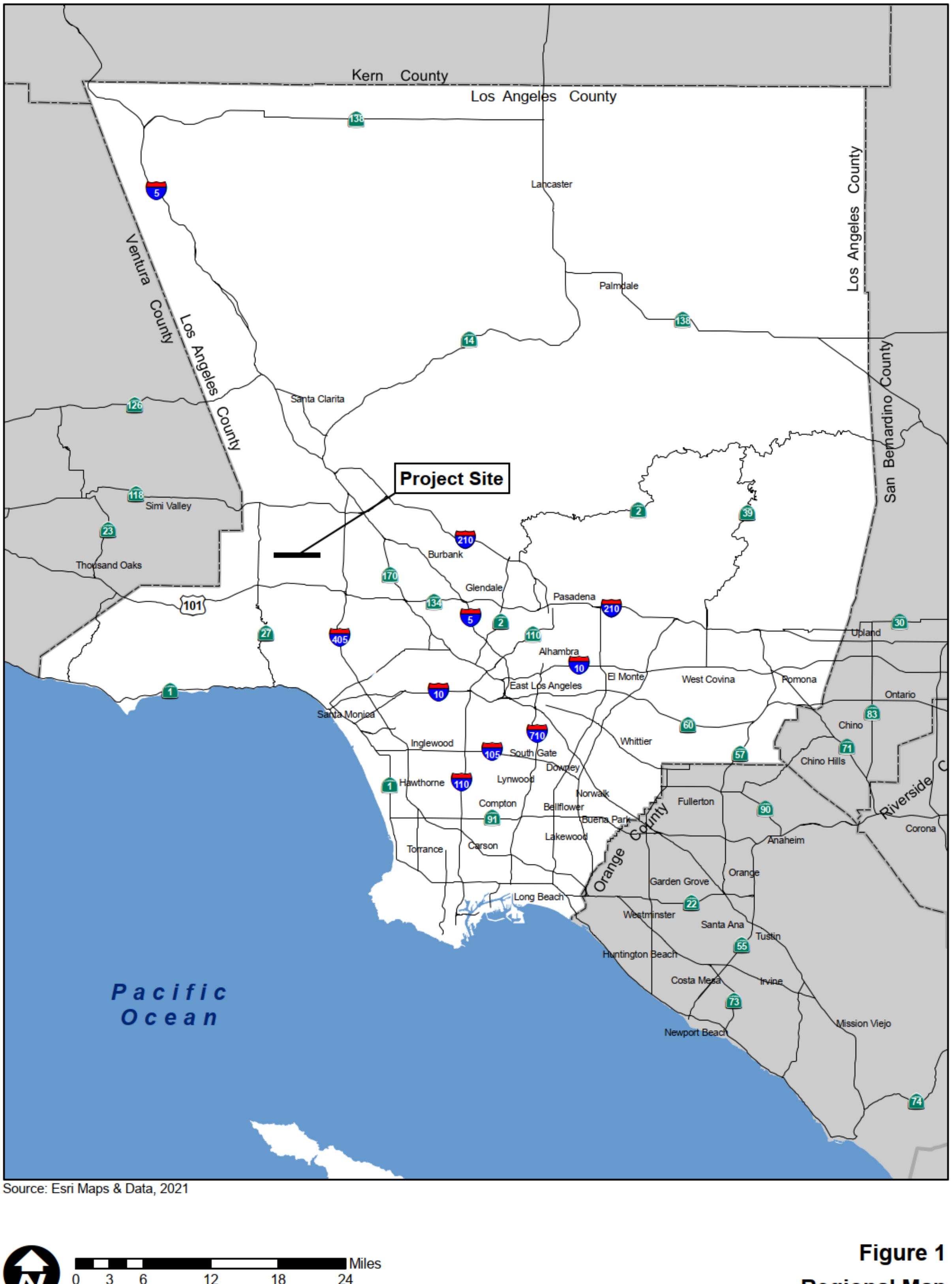
1.4 Project Background

The original Roscoe Trunk Line, portions of which were installed in 1917 and portions in 1931, consisted of welded and riveted steel pipe ranging from 39 to 48 inches in diameter. It originally extended from Louise Avenue to the west end of the San Fernando Valley; however, the portion west of De Soto Avenue is no longer in service. The Roscoe Trunk Line is the primary source of potable water for the LADWP 947-foot service zone, which encompasses the majority of the communities of Reseda and Winnetka south of Roscoe Boulevard.

In 1998, due to the age and condition of the original trunk line, it was "slip-lined," whereby a 34-inch diameter high-density polyethylene (HDPE) pipe was placed within the existing larger diameter steel pipe to carry the water supply. However, the HDPE line has experienced 15 leaks or breaks between 2004 and 2019, and the condition of the line compromises the reliability of water supply in the 947-foot service zone and also substantially increases long term maintenance costs. In addition, although the Roscoe Trunk Line is not crossed by any active earthquake faults, it is nonetheless located in a seismically active area, and the majority of the line is located in areas identified as potentially susceptible to seismically-induced liquefaction, which could cause additional damage to the line during a seismic event.

1.5 Project Objectives

The primary objective of the proposed project is to replace the existing HDPE Roscoe Trunk Line to increase and maintain the reliability and resilience of the potable water system supplying the 927-foot service zone. In addition, through direct interconnections with adjacent service zones (the 1,124-foot zone and the 1,134-foot zone), the RTLR would also improve system redundancy and thereby increase reliability and operational flexibility in the 927-foot as well as other service zones in the west San Fernando Valley (Figure 3).



Source: Esri Maps & Data, 2021

Figure 1
Regional Map

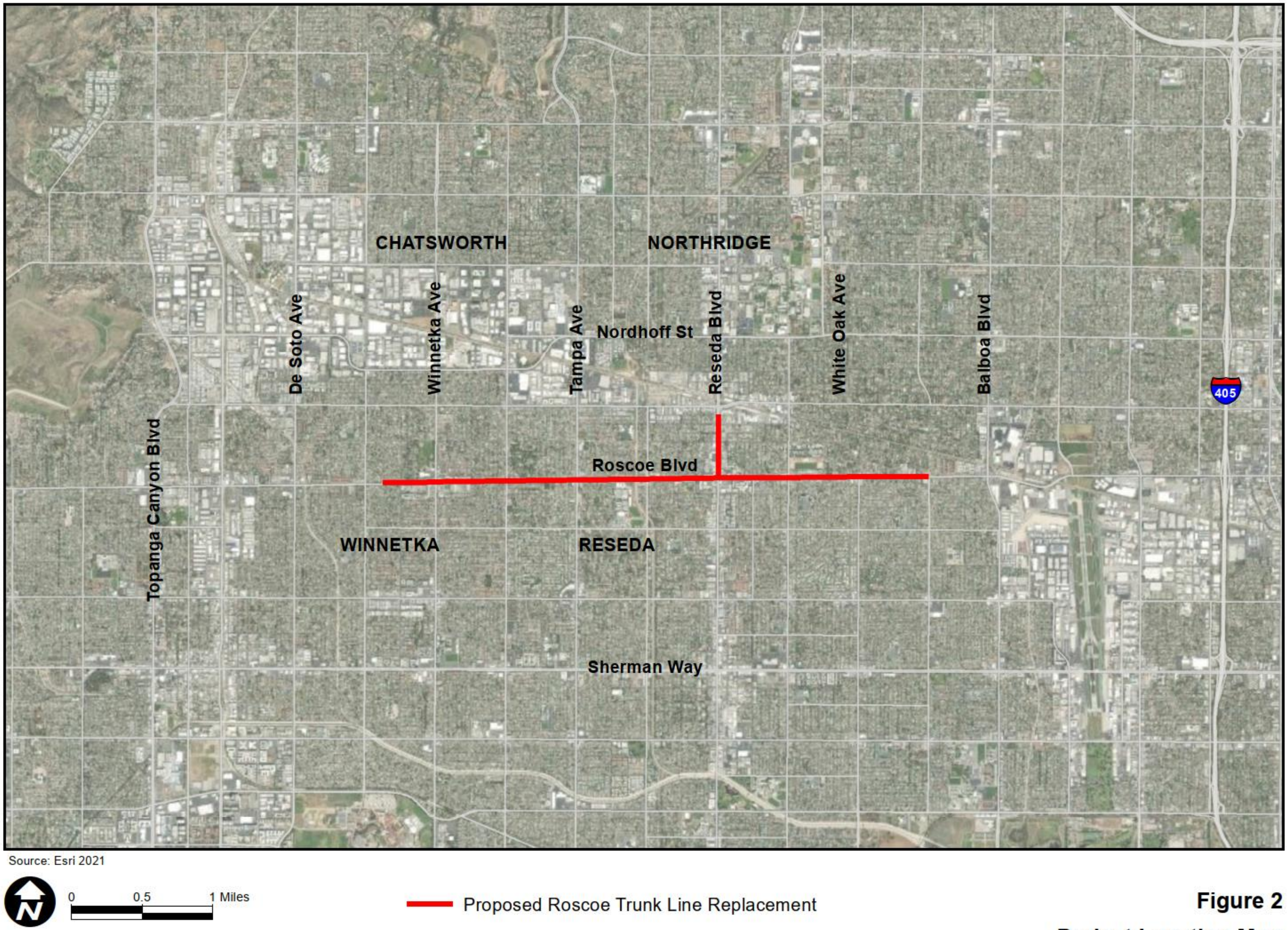


Figure 2

Project Location Map

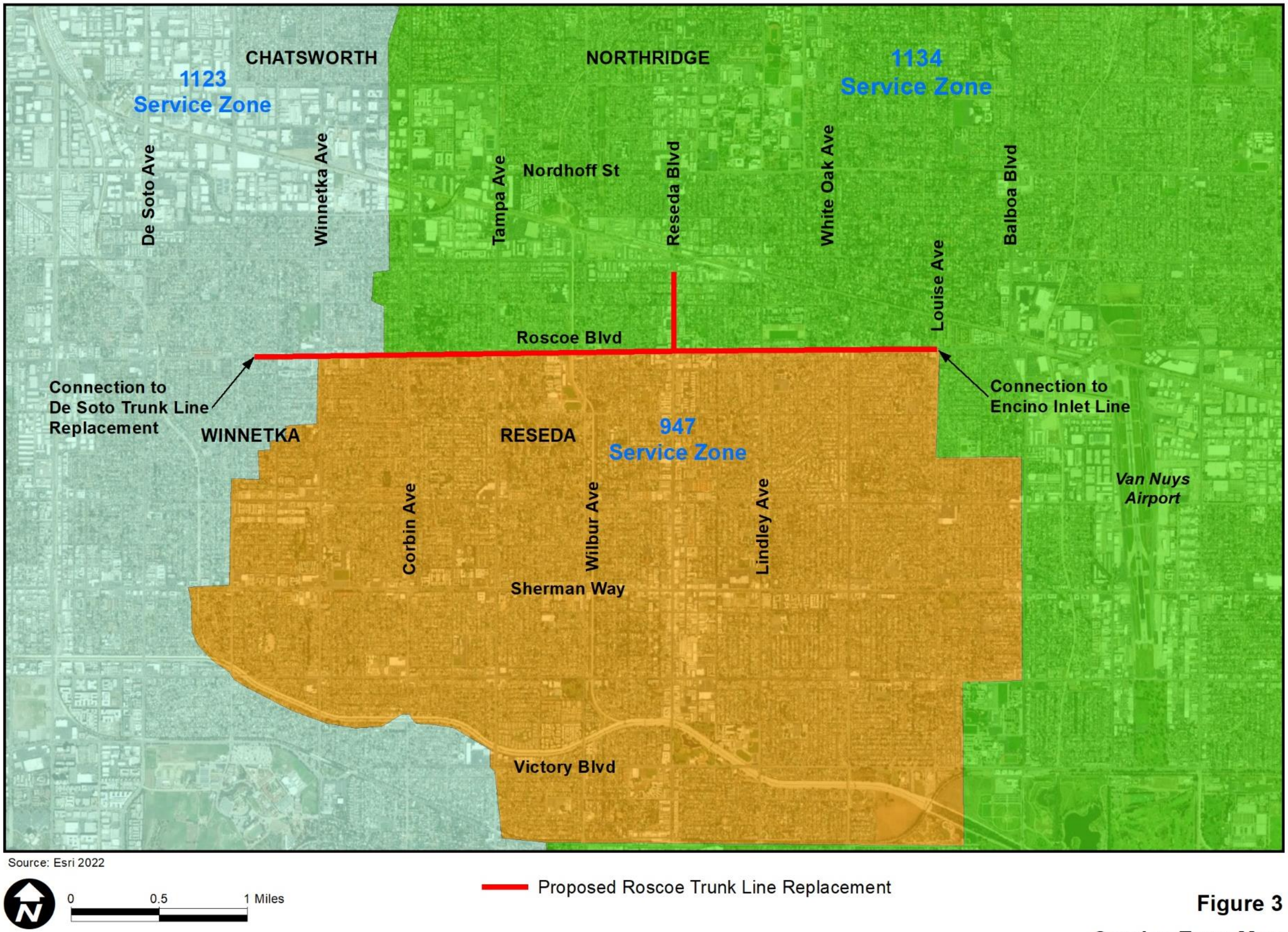


Figure 3

Service Zone Map

Document Path: \\na.aecomnet.com\lfs\AMER\LosAngeles-USLAX02\DCS\Projects\BDL\2021\60654479_TO61Roscoe\900-CAD-GIS\920-GIS - Graphics\02_Maps\02_Report_Maps\Figure 3 Service Zone Map.mxd

1.6 Proposed RTLR Components and Location

The primary component of the proposed project is a new 48-inch diameter underground trunk line, which would the replace the existing HDPE Roscoe Trunk Line. As previously discussed, the replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line and the 1,134-foot service zone at Louise Avenue. On the west, the RTLR would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement and the 1,123-foot service zone near Manson Avenue. Because the existing Roscoe Trunk Line must remain in service until the proposed replacement project is completed, the RTLR would be installed in an alignment parallel to, rather than actually removing and replacing, the existing trunk line (Figure 4).

As further discussed below, depending on conditions, portions of the RTLR would consist of welded steel pipe (WSP), which is considered a continuous pipeline because the joints between pipe segments are welded together. Seismic loads created by ground displacement from an earthquake are accommodated by the capability of the walls of the WSP to stretch and bend. However, the majority of the RTLR would consist of earthquake resistant ductile iron pipe (ERDIP). ERDIP is considered a segmented pipeline because the pipe segments are joined with a gasket rather than being fused together. This gasket provides flexibility at the joints to accommodate seismic loads by allowing the pipeline not only to bend laterally but also expand and contract lengthwise.

Because the RTLR would interconnect directly to the 1,134-foot and 1,127-foot zones to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline, which would provide the direct service to the 947-foot zone currently provided by the existing Roscoe Trunk Line. The proposed 16-inch mainline would closely parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west. It would consist of ERDIP to provide resilience during seismic events. The 16-inch mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones.

To reduce the operating pressure between the higher service zones with which the RTLR would interconnect (i.e., the 1,134-foot and 1,127-foot zones) and the 947-foot zone, the proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project.

As is the case with the existing Roscoe & Louise Regulating Station, the two proposed regulating stations would be located entirely underground. They would consist of three smaller diameter parallel pipes, or legs, and would include regulator valves to control pressure to the proposed 16-inch mainline. To provide maintenance access to the valves and ancillary equipment of the regulating station, they would be contained in underground vaults with interior dimensions of approximately 17 feet by 15 feet by 15 feet high. The Roscoe & Reseda Regulating Station would be located within the Roscoe Boulevard right-of-way, west of Reseda Boulevard. The Roscoe & Penfield Regulating Station would be located with the Penfield Avenue right-of-way, north of Roscoe Boulevard.

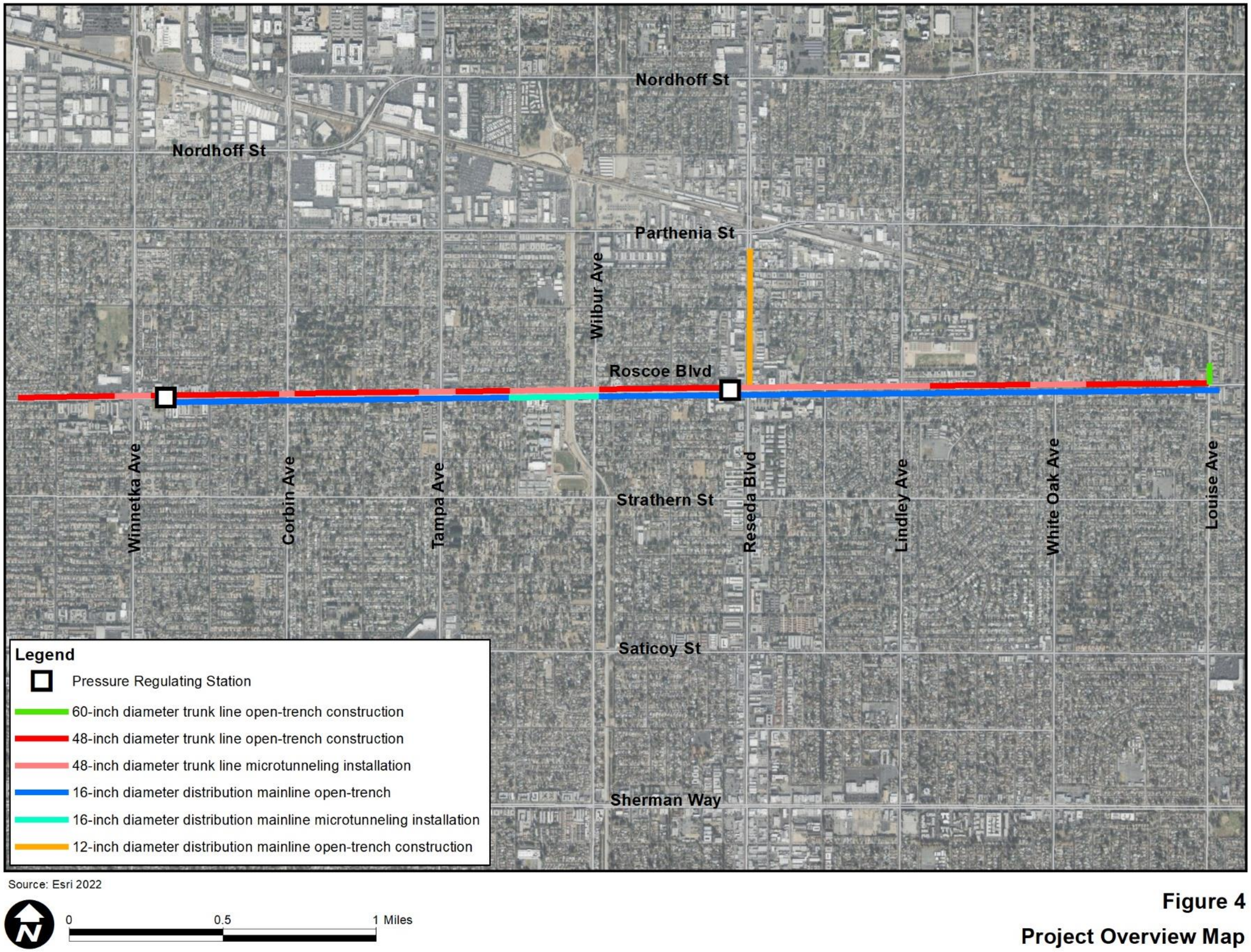


Figure 4
Project Overview Map

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street. This proposed 12-inch mainline would connect to the RTLR and would replace an existing 8-inch mainline in the same alignment with larger-diameter ERDIP to extend the seismically resilient distribution network toward California State University, Northridge, which is considered a critical facility. In addition, 250 linear feet of 60-inch diameter WSP would be installed in Louise Avenue north of Roscoe Boulevard for connection to the future proposed Havenhurst Trunk Line replacement.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include pressure relief stations, valves, flow meters, and maintenance holes. All these facilities would be located underground within the road right-of-way.

After the RTLR is operational, the existing Roscoe Trunk Line would be isolated from the drinking water system and abandoned in place. Since the RTLR would connect directly to the De Soto Trunk Line Replacement near Mason Avenue, the existing underground De Soto & Roscoe Regulator Station, which connects the existing Roscoe Trunk Line to the De Soto Trunk Line, would also be abandoned in place.

1.7 Project Construction

1.7.1 Construction Schedule

Construction for the proposed project is preliminarily scheduled to begin in mid-2024 and would take approximately 7 years to complete. In order to achieve this schedule, various sections of the project would be under construction concurrently in different locations within the project limits, as discussed further below in Section 1.7.6 of Chapter 1 of this IS/MND.

1.7.2 Trunk Line Open-Trench Construction

The majority of the RTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline segments are placed in the trench, the trench is backfilled, and the road is repaved. ERDIP would be utilized in all trunk line open-trench construction. Open-trench construction is the preferred method of construction due to initial installation costs, ease of access related to future maintenance and repair because of relatively shallow installation depths, greater control to minimize conflicts with existing underground infrastructure, and the ability to utilize and maximize the benefits of ERDIP to provide system resilience.

In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, these work zones would range between approximately 800 and 1,200 feet in length.

The work zones would be the minimum width required to accommodate the trench (wide enough for both the RTLR and the proposed 16-inch mainline), shoring required to stabilize the trench walls, safety setbacks adjacent to the trench, barriers separating traffic from construction activities, and adequate area to safely and effectively operate equipment and trucks, as well as the flexibility to avoid existing substructures in the road. Based on the width of the work zone, a minimum of one vehicle travel lane in each direction would be maintained on Roscoe Boulevard at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. However, on-street parking lanes may be temporarily eliminated adjacent to the work zone.

These work zones would allow for the continuous installation of the pipeline in longer spans without the requirement to frequently disassemble and relocate barriers, equipment, and construction support facilities and modify traffic control elements, all of which would hamper the pipeline installation process but not substantially improve the flow of traffic in the vicinity of the construction. In addition to the actual work zones, lane transition zones would be required extending outward from the work zone along Roscoe Boulevard to channel approaching traffic into the travel lanes adjacent to the work zone.

The open-trench construction process would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site and either reclaimed for use as paving material or road base material, or it would be taken to a landfill as inert debris that can be recycled as road base for internal landfill use.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench would be required to provide a stable and safe working environment. The type of shoring system used would depend on soil conditions, but for environmental analysis purposes, it is assumed that steel H-beams supporting steel plates would be utilized. Prior to any excavation of the trench, the H-beams would be set as vertical piles along both edges of a length of trench, spaced to support the steel plates. Depending on soil conditions, the H-beam piles would be installed in pre-augered holes or by using a vibratory driver, or a combination of both. No impact piling-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately 1 month.

After the shoring piles are in place, work would begin on installing individual pipe segments. A trench approximately 12 feet wide and normally 10 feet deep would be excavated. This depth of trench would accommodate the 48-inch diameter trunk line, bedding material under the trunk line, and the minimum 5 feet of cover required over the line. However, in limited areas, to avoid relocating existing substructures, such as water, storm, or sanitary sewer lines crossing the RTLR alignment, the trench may need to be up to 20 feet deep.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 40 linear feet of trench could be excavated and shored in a day. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone. While some of the excavated material may be utilized at other construction sites within the region, it is assumed for environmental analysis purposes that all material would be hauled to a local landfill.

After a sufficient length of trench is excavated, a pipe segment would be placed in the trench by a crane and joined to the preceding pipe segment. The ERDIP segments are joined with a bell-and-spigot gasket joint. Once the pipe joint is complete, cement slurry bedding material would be placed under the newly installed pipe segment to secure its position. Approximately two segments of ERDIP, which are nominally 20 feet in length, could be installed in a day. However, as this installation is occurring, the work on the succeeding sections of the pipeline alignment would be initiated, beginning with the excavation of the trench and placement of shoring. In this manner, the work associated with adjacent sections of the pipeline installation could overlap by a few days.

Once approximately 200 feet of pipeline have been installed, the trench would be partially backfilled with a soil-cement slurry, which would be delivered by concrete trucks. As discussed above, the trunk line would require a minimum of 5 feet of cover, which would be achieved with a trench depth of approximately 10 feet. However, because the proposed 16-inch distribution mainline would be installed in the same trench at a shallower depth, the trench would be only partially backfilled after installation of the trunk line.

The 16-inch mainline, which requires only a minimum of 3 feet of cover, would then be installed within the partially backfilled trench. It would be offset both horizontally and vertically from the trunk line to provide separation between the two pipelines to avoid potential future maintenance access conflicts. The mainline pipe segments would be installed in a similar fashion as the trunk line segments. The installation of the mainline would occur while the installation of the trunk line would be underway in forward areas of the trench.

After the mainline is installed, the trench would be backfilled to just below the top of pavement. After the trench backfilling, the H-beam piles and shoring plates would be extracted and the pile holes would be backfilled. After several hundred feet of trench have been completely backfilled, the road would be repaved to the level of the surrounding road surface.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones.

The above described process would be repeated until all the pipe (both the RTLR and the 16-inch mainline) and appurtenant facilities have been installed within the designated construction work zone. The time-frames indicated above are approximate, and unforeseen conditions, such as previously undetected underground utilities, soil conditions, or the presence of groundwater may affect the pace of construction. After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range from approximately 8 to 12 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The same basic process described above would also apply to the installation of the 60-inch WSP in Louise Avenue, which would extend approximately 250 feet north of Roscoe Boulevard.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the RTLR and the 16-inch mainline within the same trench. These would include a drill rig, excavator, front loader, hydraulic cranes, forklifts, pavement saw, sweeper, utility trucks, and generators. However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 18 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity, this may require up to about 5 concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately 23 truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and mainline installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

1.7.3 Trunk Line Microtunneling

While the majority of the RTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling construction method would be employed to install the trunk line. This would apply to areas where large substructures that cannot be readily relocated would preclude the excavation of a trench the depth and width required for the RTLR. These structures include major sewer, storm, natural gas, or water lines or other structures, including Aliso Canyon Wash, a large concrete-lined flood control channel that crosses beneath Roscoe Boulevard. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The substructures that would conflict with the RTLR installation both cross Roscoe Boulevard, usually at major intersections, and run within Roscoe Boulevard, parallel with the RTLR alignment. Preliminarily, microtunneling spans along Roscoe Boulevard identified for the project would extend beneath White Oak Avenue; from east of Lindley Avenue to west of Reseda Boulevard; from east of Wilbur Avenue to west of Vanalden Avenue; beneath Tampa Avenue; beneath Corbin Avenue, and beneath Winnetka Avenue. The total length of pipe jacking on Roscoe Boulevard is preliminarily estimated at approximately 7,800 feet of the total 21,000-foot RTLR (Figure 4).

While direct disturbance of most the roadway surface within a tunneling span is avoided, the microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the tunneling and jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, a minimum of one vehicle travel lane in each direction would be maintained on Roscoe Boulevard at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. The work zones surrounding each shaft would be approximately 350 feet long. They would overlap in location with the adjacent open-trench work zone, but both work zones would not be active at the same time.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 40 feet. To accommodate the tunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching shafts would be approximately 20 feet wide and 50 feet long. The receiving shafts would be approximately 20 feet wide and 30 feet long, large enough to receive the tunnel boring machine and allow it to be retrieved from the shaft.

The type of shoring system used to stabilize the shaft walls would depend on the soil and other conditions at each shaft location, but for environmental analysis purposes, it has been assumed that interlocking steel sheet piles would be used as shoring material to help control the intrusion of groundwater (which may be present at the depths of the shafts in various locations within the project limits), thereby minimizing the requirement for dewatering. After the road pavement above the shaft has been stripped, the sheet piles would be installed around the perimeter of the shaft prior to excavation. The pile installation would be achieved using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of tunneling equipment would take several weeks.

Several types of tunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits tunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface into the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 20 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded to the previous segment to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

After the casing pipe is in place, the new trunk line pipe segments, which are also nominally 20 feet in length, would be pushed through from the launching shaft to the receiving shaft using the hydraulic jack. ERDIP is less suitable for this application, so WSP would be used where microtunneling is employed. Each new segment of trunk line would be welded to the previous. Radial spacers would be strapped to the segments to maintain clearance between the edges of the casing pipe. Grout would then be injected to permanently fill the gap between the casing pipe and trunk line.

After the pipe is entirely installed within the tunnel, a section of WSP would be installed via an open-trench method to provide the vertical transition required to connect to the adjacent open-trench ERDIP trunk line, which would have been installed at a shallower depth than the tunneled section of trunk line. The boring equipment would then be removed and transported to the succeeding tunnel span, if applicable. The shaft would be backfilled with soil-cement slurry to below top of pavement, the shoring piles would be removed, the road surface repaved and restriped, and the work zone barriers would be removed.

Because microtunneling is limited to a length of approximately 1,000 feet, in some longer spans identified for tunneling under the proposed project, it would be necessary to have intermediate shafts in addition to the shafts at the end points of the entire span.

The pipe casing would be installed in the tunnel at an average rate of about two to three segments per day, and the trunk line pipe segments would be installed at a similar rate. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 900 feet to over 3,500 feet in total length. However, the entire microtunneling operation at a given shaft location would be expected to range from approximately 8 months to 10 months. However, at intermediate shafts, where tunneling would occur sequentially in both directions, operations at a given shaft may extend to approximately 15 months.

Various pieces of construction equipment would be used to accomplish the pipe jacking installation, including an excavator, front loader, hydraulic crane, utility truck, generator, MTBM, hydraulic jacking system (including hydraulic pumping equipment at the surface), tunnel ventilation systems, and the slurry separator plant.

Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about 22 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a

10-cubic yard truck capacity, this may require up to about 25 concrete trucks per day to backfill both shafts.

The pipe jacking installation would require approximately 10 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

1.7.4 Distribution Mainline Open-Trench Installation

The majority of the 16-inch distribution mainline would be installed in conjunction with the open-trench installation of the ERDIP trunk line. However, where the RTLR would be installed via the microtunneling method described above, the 16-inch distribution mainline could not be accommodated in the tunnel. Furthermore, since the 16-mainline must connect to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones, it could not generally be installed at the depths of the RTLR microtunneling. Therefore, within the microtunneling spans, the 16-inch mainline would be installed utilizing an open-trench method similar to that described above. The only exception to this would be at the Aliso Canyon Wash crossing, where the distribution line would be installed for a relatively short distance via microtunneling under the channel.

The open trench installation would require the establishment of work zones within the roadway. However, because of the relatively smaller diameter of the mainline pipe and the shallower depth requirements, the trench would be substantially smaller, at 5 feet deep and 3 to 4 feet wide, depending whether shoring is required. The work zone may also be correspondingly narrower, and, depending on the exact alignment of the pipeline, several vehicle travel lanes may be available during construction. However, a minimum of one travel lane in each direction would be maintained at all times adjacent to the portion of the roadway under construction.

An average of approximately 100 linear feet of mainline pipe would be installed each week. Various pieces of construction equipment would be used to accomplish the open-trench installation of the 16-inch mainline. These would include an excavator, front loader, small hydraulic crane, forklift, pavement saw, sweeper, utility trucks, and generators. However, as discussed above, these pieces of equipment would operate to perform specialized tasks, and, therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

The daily peak of haul truck trips would occur during the excavation of the trench, which may require up to 8 dump trucks trips per day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry, which would require about 5 concrete trucks per day, assuming a 10-cubic yard truck capacity. The excavation and backfilling operations may occur simultaneously in different segments of the trench, which would result in a peak of 13 truck trips per day within a given work zone.

The open-trench installation would require approximately 20 daily construction personnel in a given work zone. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone would be approximately 4 months. The process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

This same process described above would apply to the 12-inch mainline in Reseda Boulevard, where no trunk line installation would occur.

1.7.5 Regulating Stations

As mentioned above, two new regulating stations would be constructed as part of the proposed project. One would be located within Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station), and the other would be located within Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station). Although the dimensions of the two regulating station vaults would vary based on exact requirements, they would nominally require a pit approximately 25 feet deep, 20 feet wide, and 23 feet long to accommodate the vault set on base material as well as the space required to connect the pipe legs from the RTLR.

It has been assumed that interlocking corrugated steel sheet piles would be used as shoring material to stabilize the pit walls and limit groundwater intrusion, thereby minimizing the requirement for dewatering. After the road pavement has been stripped, the sheet piles would be installed prior to any excavation using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the pit would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the pit and hauled from the construction work zone to a local landfill.

Once the area is excavated, base material to support the vault would be laid down, the precast concrete vault would be placed, and the pipe legs with the regulator valves would be installed within the vault envelope and extended through the vault walls to a manifold pipe, which in turn would connect to the trunk line. Support equipment, such as ladders, catwalks, and ventilation would be installed within the vault. The pit would be backfilled with soil-cement slurry to below top of pavement and the road surface repaved.

The construction of each regulating station would take approximately 4 to 6 months to complete. Installation of the stations would occur after the installation of the trunk line, and a separate construction zone within the road right-of-way would be established for this work. Various pieces of construction equipment would be used to construct the stations. These would include an excavator, front loader, hydraulic crane, sweeper, utility trucks, and generators. These pieces of equipment would be used only for certain tasks (i.e., to excavate the vault pit or set the vault in the pit), and they would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 20 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The daily peak of delivery trucks would occur during the backfilling of the pit with the soil-cement slurry, which would require about 20 concrete trucks per day, assuming a 10-cubic yard truck capacity.

The regulating station construction would require approximately 20 daily construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

1.7.6 Concurrent Construction

As mentioned above, in order to achieve the construction schedule proposed for the project, various sections of the project would need to be under construction concurrently in different locations within the total project limits. This may include concurrent construction within two nonadjacent open-trench trunk line work zones as well as within two nonadjacent open-trench distribution mainline work zones. Work within a microtunneling span may also occur concurrently with open-trench work elsewhere within the project limits. However, open-trench installation of the 16-inch mainline would not occur concurrently in the same area where tunneling was occurring because of potential conflicts. Tunneling work would generally be accomplished sequentially, but while actual tunneling activity is occurring within a given span, preliminary work (i.e., excavation and shoring of shafts) may occur concurrently in preparation for tunneling in another span. As mentioned above, it is anticipated that the construction of the regulating stations would occur after the trunk line was installed.

1.7.7 Connections

As discussed above, the existing Roscoe Trunk Line must remain in service during project construction to continue to provide water to the service area. Therefore, the RTLR, including the two new regulating stations and the parallel 16-inch mainline, would first be placed in service and supplied via a connection to the new De Soto Trunk Line Replacement at Mason Avenue at the west end of the RTLR. The existing Roscoe Trunk Line would remain in service and supplied by the existing Roscoe & Louise Regulator Station at the east end of the RTLR. This would allow connections from the 16-inch mainline to the distribution system to be done with minimal impact to normal operations in the 947-foot service zone. Once these distribution connections have been made, the RTLR connection to the Encino Inlet Line at Roscoe Boulevard and Louise Avenue would be made as well as the connection of the 16-inch mainline connection to the Roscoe & Louise Regulating Station. The shutdown of the existing Roscoe Trunk Line would take place during the winter months when water demand is low to avoid potential supply issues. As discussed above, the existing Roscoe Trunk Line, along with the existing De Soto & Roscoe Regulating Station, would be isolated from the drinking water system and abandoned in place once these final connections have been made.

1.8 Project Operations

The RTLR would interconnect the 1123-foot service zone at the west end and the 1134-foot service zone at the east end, allowing flow between the two zones, providing operational flexibility and system redundancy. The 947-foot zone would be supplied by the RTLR via Roscoe & Louise, Roscoe & Reseda, and Roscoe & Penfield regulating stations connection to the new 16-inch mainline. The RTLR would not require any additional supplies from the City's drinking water system. The RTLR would be located entirely underground and would not be visible. Activities associated with long-term operations would be minimal, limited to scheduled maintenance or emergency repair. However, repair operations are anticipated to decrease substantially after project implementation when compared to current conditions. No additional permanent LADWP workforce would be required to operate the RTLR.

1.9 Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors and are not unique to the proposed project.

The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:

- Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:
  - Pave the surface extending at least 100 feet and at least 20 feet wide;
  - Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
  - Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:

- Minimizing the extent of disturbed areas and duration of exposure;
- Stabilizing and protecting disturbed areas;

- Keeping runoff velocities low; and
- Retaining sediment within the construction area.

Construction erosion control BMPs may include the following:

- Temporary desilting basins;
- Silt fences;
- Gravel bag barriers;
- Temporary soil stabilization with mattresses and mulching;
- Temporary drainage inlet protection; and
- Diversion dikes and interceptor swales.

Since project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 1 through September 1, and as early as January for raptors) could not be avoided. Therefore, the following BMPs shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

- A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities to determine whether active nests are present within parkways directly adjacent to the construction zone. All nests found shall be recorded.
- In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g., existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.
- The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.
- Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and a buffer shall be established to protect the nest until fledging has occurred. If work must proceed in the vicinity of the nest, and it is determined by the biologist that impacts to

the listed species may occur, the applicable federal and/or state agency (United States Fish and Wildlife Service, California Department of Fish and Wildlife) shall be notified. Work in other areas of the project site may continue until the active nest has been evaluated.

Residences and businesses near the pipeline alignment would be notified prior to the start of construction (e.g., via flyers) of lane closures and parking restrictions in their vicinity. The notices would include a telephone number for comments or questions related to construction activities.

The proposed project construction would incorporate source reduction techniques and recycling measures and maintain a recycling program to divert waste in accordance with the Citywide Construction and Demolition Debris Recycling Ordinance (Ordinance 181519). In accordance with Ordinance 181519, all haulers and contractors must obtain a Waste Hauler Permit from LASAN prior to collecting, hauling, and transporting construction and demolition waste. Construction and demolition waste can only be taken to City certified construction and demolition waste processing facilities.

LADWP would coordinate with all applicable agencies regarding construction schedules and worksite traffic control and detour plans, including but not limited to the City of Los Angeles Department of Transportation, the City of Los Angeles Department of Public Works, Bureau of Engineering, the City of Los Angeles Fire Department, and the City of Los Angeles Police Department.

All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring and mitigation plan (CRMMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

1.10 Required Permits and Approvals

Numerous approvals and/or permits would be required to implement the proposed project. The environmental documentation for the project would be used to facilitate compliance with federal and state laws and the granting of permits by various state and local agencies having jurisdiction over one or more aspects of the project. These approvals and permits may include, but may not be limited, to the following:

City of Los Angeles Department of Public Works, Bureau of Engineering

- Excavation Permit
- Peak Hour Exemptions

City of Los Angeles Bureau of Street Lighting

- Street Lighting Permit

City of Los Angeles Bureau of Street Services

- Street Closure Permit

City of Los Angeles Department of Transportation

- Approval of Traffic and Signal Control Plan
- Approval of temporary road closures

State of California Department of Industrial Relations, Division of Occupational Safety and Health, Mining and Tunneling Unit

- Underground Classification Permit for tunneling and jacking locations

State of California State Water Resources Control Board

- State wide General Permit for Storm Water Associated with Construction Activities
- State wide General Permit for Potable Water Discharges – includes hydrostatic test water discharges

State of California Los Angeles Regional Water Quality Control Board

- National Pollution Discharge Elimination System (NPDES) for Groundwater Dewatering

CHAPTER 2
INITIAL STUDY CHECKLIST

The following discussion of potential environmental effects was completed in accordance with Section 15063(d)(3) of the CEQA Guidelines (2021) to determine if the proposed project may have a significant effect on the environment.

CEQA INITIAL STUDY FORM

Project Title:
Roscoe Trunk Line Replacement Project

Lead Agency Name and Address:
Los Angeles Department of Water and Power
Environmental Planning and Assessment
111 North Hope Street, Room 1044
Los Angeles, CA 90012

Contact Person and Phone Number:
Nancy Chung
Environmental Planning and Assessment
Los Angeles Department of Water and Power
(213) 367-0404

Project Sponsor's Name and Address:
Los Angeles Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012

Project Location:
The proposed project would be located in the western portion of the San Fernando Valley in the City of Los Angeles. The replacement trunk line and mainline would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from approximately Mason Avenue on the west to Louise Avenue on the east. Roscoe Boulevard, an east-west thoroughfare, forms the boundary between the communities of Northridge and Chatsworth to the north and Reseda and Winnetka to the south. The proposed project would also include a replacement distribution mainline within Reseda Boulevard between Roscoe Boulevard and Bryant Street. All these proposed facilities would be located underground within the road right-of-way.

General Plan Designation:
The proposed project would be located entirely within the existing road right-of-way. The properties adjacent to the proposed pipeline alignment include the following designations: public facilities, very low residential, low residential, low medium residential, medium residential, general commercial, community commercial, neighborhood office commercial, and highway oriented commercial.

Zoning:
The properties along the proposed project alignment are zoned, Public Facilities (PF), Suburban (RA and RS), One-Family (R1), Multiple Dwelling (R3 and R4), Restricted

Density Multiple Dwelling (RD), Limited Commercial (C1 and CR), and Commercial (C2 and C4).

Description of Project:
The primary component of the proposed project is a new 48-inch diameter underground trunk line, which would the replace the existing HDPE Roscoe Trunk Line. The replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line at Louise Avenue. On the west, the RTLR would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement at Mason Avenue. Because the existing Roscoe Trunk Line must remain in service until the proposed replacement project is completed, the RTLR would be installed in an alignment parallel to, rather than actually removing and replacing, the existing trunk line.

The proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline. The proposed 16-inch mainline would closely parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west. The proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project.

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street.

Surrounding Land Uses and Setting:
The installation of the proposed project would occur in public streets in the urbanized and fully developed communities of Northridge, Chatsworth, Reseda, and Winnetka. The line would be located in public roadways within residential, commercial, office, and public facilities uses.

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 Environmental Impacts discussion in Chapter 3.

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

DETERMINATION

On the basis of this initial evaluation:

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

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

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

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

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

March 18, 2022

Signature Date

Charles C. Holloway
Manager of Environmental Assessment and Planning
Los Angeles Department of Water and Power

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**AESTHETICS**. Except as provided in Public Resources Code Section 21099, would the project:				
a.	Have a substantial adverse effect on a scenic vista?				**X**
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				**X**
c.	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				**X**
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?				**X**
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?				**X**
b.	Conflict with existing zoning for agricultural use, or a Williamson act contract?				**X**
c.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				**X**
d.	Result in the loss of forest land or conversion of forest land to non-forest use?				**X**
e.	Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				**X**

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
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?			X	
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality?			X	
c.	Expose sensitive receptors to substantial pollutant concentrations?			X	
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	
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?			X	
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?				X
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
V.	**CULTURAL RESOURCES**. Would the project:				
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?				X

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			X	
c.	Disturb any human remains, including those interred outside of formal cemeteries?			X	
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?			X	
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X
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:				
	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 California Geological Survey Special Publication 42.			X	
	ii) Strong seismic ground shaking?			X	
	iii) Seismic-related ground failure, including liquefaction?			X	
	iv) Landslides?				X
b.	Result in substantial soil erosion, loss of topsoil, or changes in topography or unstable soil conditions from excavation, grading, or fill?			X	
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				X
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
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?			X	

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X
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?			X	
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e.	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X
X.	**HYDROLOGY AND WATER QUALITY**. Would the project:				
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner that would:				
	i) Result in substantial erosion or siltation on- or off-site?				X
	ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?				X

	Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
iii) Create or contribute runoff water which would exceed the capacity of existing or planner stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
iv) Impeded or redirect flood flows?				X
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X
XI. LAND USE AND PLANNING. Would the project:				
a. Physically divide an established community?				X
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				X
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?				X
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
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?		X		
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?		X		
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
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)?				X
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
	i) Fire protection?				**X**
	ii) Police protection?				**X**
	iii) Schools?				**X**
	iv) Parks?				**X**
	v) Other public facilities?				**X**
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?				**X**
b.	Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				**X**
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?			**X**	
b.	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?				**X**
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			**X**	
d.	Result in inadequate emergency access?			**X**	
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)?				**X**

		Potentially Significant Impact	Less Than Significant Impact After Mitigation Incorporated	Less Than Significant Impact	No Impact
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 the Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		
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 of which could cause significant environmental effects?				X
b.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				X
c.	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
d.	Generate solid waste in excess of state or local standards, or in excess of the future capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e.	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X
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?				X
b.	Due to slope, prevailing winds, and other factors, exacerbate wildland fires risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				X
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may result in temporary or ongoing impacts to the environment?				X
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				X

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

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CHAPTER 3
ENVIRONMENTAL IMPACT ASSESSMENT

INTRODUCTION

The following discussion addresses impacts to various environmental resources per the Initial Study checklist questions contained in Appendix G of the CEQA Guidelines.

I. AESTHETICS

Would the project:

a) Have a substantial adverse effect on a scenic vista?

No Impact. The proposed project would not have an adverse effect on a scenic vista. Scenic views or vistas are panoramic public views of various natural features, including the ocean, striking or unusual natural terrain, or unique urban or historic features. Public access to these views may be from park lands, private and publicly owned sites, and public right-of-way. No portion of the proposed project is located within a scenic vista. Furthermore, the proposed project would be located entirely underground and would have no impacts to aesthetic resources. The proposed project would not have an adverse effect on a scenic vista, and no impact would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Implementation of the proposed project would not damage scenic resources within a state scenic highway. No state highways within the project vicinity are designated as California Scenic Highways.[1] Additionally, no portion of the proposed project is located within a Designated Scenic Highway, as identified in the Mobility Plan 2035 of the City of Los Angeles General Plan.[2] Therefore, no scenic roadways would be altered as a result of the implementation of the proposed project, and no impact would occur.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

No Impact. The project site is located within the Community Plan Areas of Reseda-Van Nuys and Canoga Park-Winnetka-Woodland Hills-West Hills. The properties along the proposed RTLR alignment are zoned for public facilities, suburban, single- and multi-family residential, and commercial uses. The proposed project would be located within existing paved roadways in fully urbanized portions within the San Fernando Valley. No new land uses would be introduced, and the proposed project would be located entirely underground. As such, the proposed project would be

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1 State of California Department of Transportation. State Scenic Highway Program. Website: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed April 26, 2021.

2 City of Los Angeles Department of City Planning, *Mobility Plan 2035, An Element of the General Plan*, adopted April 26, 2021.

consistent with applicable zoning and other regulations governing scenic quality for the project site. Therefore, no impacts would occur.

d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

No Impact. Implementation of the proposed project would not create a new source of light or glare that would adversely affect day or nighttime views. The proposed project would be constructed only during daylight hours, so nighttime construction lighting would be required. The proposed project would be located entirely underground and would not be visible once completed. No impact related to light or glare would occur.

II. AGRICULTURE AND FORESTRY RESOURCES

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?

No Impact. The proposed RTLR alignment is located within existing paved roadways in fully urbanized portions of the San Fernando Valley. The project area is designated as Urban and Built-Up Land on the “Important Farmland in California” map prepared by the California Resources Agency pursuant to the Farmland Mapping and Monitoring Program.[3] The proposed project would not be located on or near Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the project would not convert Farmland to a non-agricultural use, and no impact to farmland would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The proposed project would be located within existing paved roadways in fully urbanized portions of the San Fernando Valley. Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and no impact would occur.

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))?

No Impact. The proposed project would be located within existing paved roadways in a fully urbanized portion of the San Fernando Valley. No portion of the proposed RTLR alignment is zoned for or developed as forest land or timberland as defined in Public Resources Code Section 12220(g) and Government Code Section 4526,

3 State of California Department of Conservation, Division of Land Resource Protection, Farmland Mapping & Monitoring Program, Important Farmland in California, 2016 map. Website: https://maps.conservation.ca.gov/DLRP/CIFF/, April 26, 2021.

respectively.[4] Therefore, the proposed project would not conflict with existing zoning for or cause a rezoning of forest or timberland, and no impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The proposed project would be located within existing paved roadways in a fully urbanized portion of the San Fernando Valley. No portion of the proposed RTLR alignment is developed as forest land or located within or adjacent to forest lands.[5] Therefore, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use, and no impact would occur.

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?

No Impact. The proposed project would be located within existing paved roadways. No portion of the project site or surrounding area is identified as Farmland. No forest lands exist within or adjacent to the proposed RTLR alignment. Therefore, the proposed project would not change the existing environment in a way that would result in the conversion of Farmland to non-agricultural use or forest land to non-forest use, and no impact would occur.

III. AIR QUALITY

Potential impacts related to air quality associated with the proposed project were determined from the results presented in the Air Quality Assessment prepared for the proposed project, which is included as Appendix A to this IS/MND.

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The following analysis addresses the consistency with applicable South Coast Air Quality Management District (SCAQMD) and Southern California Association of Governments (SCAG) policies, including the SCAQMD's 2016 Air Quality Management Plan (AQMP) and growth projections within the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). In accordance with the procedures established in the SCAQMD's CEQA Air Quality Handbook, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

- Would the proposed project result in any of the following?
  - An increase in the frequency or severity of existing air quality violations;
  - Cause or contribute to new air quality violations; or,

4 City of Los Angeles Zoning Information and Map Access System (ZIMAS). Website: http://zimas.lacity.org/, accessed April 26, 2021.
5 Ibid.

  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

- Would the proposed project exceed the assumptions utilized in preparing the AQMP?

  - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;

  - Does the project include air quality mitigation measures; or,

  - To what extent is project development consistent with the AQMP land use policies?

The first indicator is assessed by comparing emissions of air pollutants that would be produced by construction and operation of the proposed project to the SCAQMD significance thresholds, both on regional and localized scales. The regional and localized air quality significance thresholds were designed to prevent the occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects in the context of existing ambient air quality conditions. The second indicator is assessed by determining consistency of permanent operations with population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS.

The proposed project would not introduce any new permanent sources of air pollutant emissions to the South Coast Air Basin (SCAB). The analysis of potential air quality impacts related to AQMP consistency that could occur from implementation of the proposed project was based on the possibility of air pollutant emissions during construction activities exacerbating the frequency or severity of air quality violations, which occur when ambient concentrations of air pollutants exceed the established SCAQMD air quality significance thresholds.

Construction

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips by construction workers and haul and delivery trucks traveling to and from the project site. Fugitive dust emissions would primarily result from roadway stripping, excavation, and truck loading activities, as well as vehicle travel on the regional roadway network. Nitrogen dioxide (NO_X) emissions would be generated from off-road equipment exhaust and on-road vehicle exhaust. Fugitive volatile organic compound (VOC) emissions would be generated from repaving of the disturbed roadway areas with fresh asphalt. The assessment of construction air quality impacts considers all of these emissions sources. Throughout the course of the 7-year construction period, construction emissions may vary substantially from day to day, depending on the equipment and vehicle activity. The analysis invokes reasonably conservative estimates of vehicle travel and equipment usage to address potential impacts.

The project site is located within the South Coast Air Basin (SCAB). It is mandatory for all construction projects in the SCAB to comply with SCAQMD Rule 403 for

Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. Measures include, but are not limited to, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system or other control measures to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, and maintaining effective cover over exposed areas. Compliance with the provisions propagated by Rule 403 (as indicated in the BMPs in Section 1.9 of Chapter 1 of this IS/MND) would reduce regional fugitive dust respirable particulate matter ten microns or less in diameter (PM_{10}) and fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) emissions associated with construction activities by approximately 61 percent.

Daily emissions of VOCs, NO_X, carbon monoxide (CO), sulfur dioxide (SO_X), PM_{10}, and $PM_{2.5}$ that would be generated during installation of the project were estimated using the California Emissions Estimator Model (CalEEMod). Table 1 through Table 3 present the maximum daily emissions that would be generated during each major type of RTLR construction method attributed to a single work zone. Table 1 presents the maximum daily emissions that would be generated during open-trench construction of the RTLR Project. Table 2 presents the results of the emissions analysis for a single work zone engaged in the RTLR microtunneling activities. Table 3 presents the results of the emissions modeling for the shallow open-trench construction activities to install the distribution mainline parallel to segments of trunk line microtunneling.

Table 1: Estimated Daily Emissions – RTLR Open-Trench Construction

Phase and Source Location	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Subsurface Exploration and Road Stripping						
On-Site Emissions	0.3	2.9	4.3	<0.1	0.6	0.2
Off-Site Emissions	0.2	1.2	1.6	<0.1	0.6	0.2
Total	***0.5***	***4.0***	***5.9***	***<0.1***	***1.2***	***0.4***
Shoring						
On-Site Emissions	0.4	3.6	3.6	<0.1	0.2	0.1
Off-Site Emissions	0.2	1.5	1.7	<0.1	0.6	0.2
Total	***0.5***	***5.1***	***5.3***	***<0.1***	***0.8***	***0.3***
Excavation						
On-Site Emissions	0.4	3.5	4.9	<0.1	0.2	0.2
Off-Site Emissions	0.2	5.5	2.7	<0.1	1.2	0.3
Total	***0.6***	***9.1***	***7.6***	***<0.1***	***1.4***	***0.5***
Pipeline Installation						
On-Site Emissions	0.7	7.1	6.8	<0.1	0.3	0.3
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.9***	***7.5***	***8.2***	***<0.1***	***0.8***	***0.4***
Trench Backfilling						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	1.5	<0.1	0.5	0.1
Total	***0.6***	***4.7***	***8.7***	***<0.1***	***0.7***	***0.3***
Roadway Repaving						
On-Site Emissions	2.2	5.1	7.3	<0.1	0.3	0.2
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***2.3***	***5.5***	***8.7***	***<0.1***	***0.8***	***0.4***
Open-Trench Site Work Zone Analysis						
Maximum Regional Emissions	2.3	9.1	8.2	<0.1	1.4	0.5
Maximum Localized Emissions	2.2	7.1	7.3	<0.1	0.6	0.3

Note: Emission modeling files can be found in Appendix A.
Source: TAHA, 2021.

Table 2: Estimated Daily Emissions – RTLR Microtunnel Construction

Phase and Source Location	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Subsurface Exploration and Road Stripping						
On-Site Emissions	0.4	3.2	4.7	<0.1	0.8	0.2
Off-Site Emissions	0.1	1.4	1.0	<0.1	0.4	0.1
Total	***0.4***	***4.6***	***5.8***	***<0.1***	***1.2***	***0.4***
Sheet Pile Shoring						
On-Site Emissions	0.4	3.8	3.9	<0.1	0.2	0.2
Off-Site Emissions	0.1	3.0	1.6	<0.1	0.7	02
Total	***0.5***	***6.8***	***5.5***	***<0.1***	***0.8***	***0.4***
Shaft Excavation						
On-Site Emissions	0.4	4.0	5.4	<0.1	0.2	0.2
Off-Site Emissions	0.2	6.9	2.4	<0.1	1.1	0.3
Total	***0.6***	***10.9***	***7.8***	***<0.1***	***1.3***	***0.5***
Microtunnel Casing and Piping						
On-Site Emissions	1.0	9.3	10.2	<0.1	0.4	0.4
Off-Site Emissions	0.1	1.7	1.3	<0.1	0.5	01
Total	***1.1***	***11.0***	***11.4***	***<0.1***	***0.9***	***0.5***
Shaft Backfilling						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.2	4.1	2.2	<0.1	0.9	0.3
Total	***0.7***	***8.2***	***9.4***	***<0.1***	***1.1***	***0.5***
Roadway Repaving						
On-Site Emissions	0.6	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	1.7	1.3	<0.1	0.5	0.1
Total	***0.7***	***6.1***	***7.7***	***<0.1***	***0.7***	***0.3***
Microtunnel Site Work Zone Analysis						
Maximum Regional Emissions	1.1	11.0	11.4	<0.1	1.3	0.5
Maximum Localized Emissions	1.0	9.3	10.2	<0.1	0.8	0.4

Note: Emission modeling files can be found in Appendix A.
Source: TAHA, 2021.

Table 3: Estimated Daily Emissions – Distribution Mainline Open-Trench Construction

Phase and Source Location	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Subsurface Exploration and Road Stripping						
On-Site Emissions	0.2	1.3	2.1	<0.1	0.5	0.1
Off-Site Emissions	0.1	1.7	1.1	<0.1	0.4	0.1
Total	***0.2***	***3.0***	***3.2***	***<0.1***	***0.9***	***0.3***
Shoring						
On-Site Emissions	0.2	2.1	3.0	<0.1	0.1	0.1
Off-Site Emissions	0.1	0.4	0.8	<0.1	0.3	0.1
Total	***0.3***	***2.5***	***3.8***	***<0.1***	***0.4***	***0.2***
Excavation						
On-Site Emissions	0.3	2.8	4.1	<0.1	0.1	0.1
Off-Site Emissions	0.1	2.2	1.2	<0.1	0.5	0.2
Total	***0.4***	***5.0***	***5.3***	***<0.1***	***0.7***	***0.3***
Pipeline Installation						
On-Site Emissions	0.5	5.1	5.3	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.4	0.8	<0.1	0.3	0.1
Total	***0.6***	***5.5***	***6.1***	***<0.1***	***0.5***	***0.3***
Trench Backfilling						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	0.8	<0.1	0.3	0.1
Total	***0.6***	***4.6***	***8.0***	***<0.1***	***0.5***	***0.3***
Roadway Repaving						
On-Site Emissions	0.8	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	0.8	<0.1	0.3	0.1
Total	***0.9***	***4.9***	***7.2***	***<0.1***	***0.5***	***0.3***
Open-Trench Site Work Zone Analysis						
Maximum Regional Emissions	0.9	5.5	8.0	<0.1	0.5	0.3
Maximum Localized Emissions	0.8	5.1	7.2	<0.1	0.5	0.2

Note: Emission modeling files can be found in Appendix A.
Source: TAHA, 2021.

Throughout the construction period, multiple crews would be working on different components of the RTLR simultaneously, excluding the regulating stations which would be installed following completion of the pipeline components. Multiple work zones of each type of activity may be ongoing at the same time at various locations along the four-mile corridor.

Table 4 presents the regional emissions analysis of potentially overlapping activities, assuming up to five work zones could be active on a worst-case day. The analysis conservatively assumes that two RTLR open-trench work zones, two microtunnel work zones, and one distribution mainline work zone would be involved in activities producing maximum daily emissions at each site. As shown in Table 4, construction of the proposed project would not generate emissions exceeding any applicable SCAQMD regional or localized threshold, even when assuming maximum possible emissions at each individual site. The combined emissions from five work zones along the RTLR corridor would not exceed the LST screening values that apply to a singular construction site, representing a protectively conservative approach because the work zones would likely be at considerable distances from one another.

Therefore, potential impacts related to the frequency and severity of air quality violations would be less than significant during proposed project construction.

Table 4: Estimated Daily Emissions – Concurrent RTLR Construction Activities

Project Component	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Regional Emissions – Individual Sites						
RTLR Open-Trench Construction	2.3	9.1	8.2	<0.1	1.4	0.5
RTLR Microtunnel Construction	1.1	11.0	11.4	<0.1	1.3	0.5
Distribution Mainline Open-Trench	0.9	5.5	8.0	<0.1	0.5	0.3
Regional Emissions Analysis						
Maximum Daily Activities (Five Sites)	**7.8**	**45.6**	**48.4**	**<0.1**	**6.3**	**2.4**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Localized Emissions – Individual Sites						
RTLR Open-Trench Construction	2.2	7.1	7.3	<0.1	0.6	0.3
RTLR Microtunnel Construction	1.0	9.3	10.2	<0.1	0.8	0.4
Distribution Mainline Open-Trench	0.8	5.1	7.2	<0.1	0.5	0.2
Localized Emissions Analysis						
Maximum Daily Activities (Five Sites)	**7.2**	**37.9**	**42.1**		**3.2**	**1.6**
SCAQMD Localized Threshold	-	103	426	-	4	3
Exceed Threshold?	***-***	***No***	***No***	***-***	***No***	***No***

Note: Emission modeling files can be found in Appendix A.
Source: TAHA, 2021.

Following installation of the trunk line and distribution line segments, two regulating stations would be constructed as part of the proposed project. One station would be located within Roscoe Boulevard west of Reseda Boulevard and the other station would be located within Penfield Avenue north of Roscoe Boulevard. Construction of each regulating station would take four to six months, and the emissions analysis assumes construction of the two stations would overlap. Table 5 presents the daily air pollutant emissions that would be generated during each phase of regulating station construction, and the regional and localized comparative analyses in the bottom portion accounted for a doubling of the maximum daily emissions from one work zone.

Table 5: Estimated Daily Emissions – Regulating Stations Construction

Phase and Source Location	Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Road Stripping						
On-Site Emissions	0.3	2.4	3.9	<0.1	0.5	0.2
Off-Site Emissions	0.2	2.8	2.0	<0.1	0.8	0.2
Total	***0.5***	***5.3***	***6.0***	***<0.1***	***1.4***	***0.4***
Shoring						
On-Site Emissions	0.4	3.6	3.6	<0.1	0.2	0.1
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.5***	***4.0***	***5.1***	***<0.1***	***0.7***	***0.3***
Excavation						
On-Site Emissions	0.4	3.5	4.9	<0.1	0.2	0.2
Off-Site Emissions	0.2	5.5	2.7	<0.1	1.2	0.3
Total	***0.6***	***9.1***	***7.6***	***<0.1***	***1.4***	***0.5***
Vault Installation						
On-Site Emissions	0.6	5.8	6.2	<0.1	0.3	0.3
Off-Site Emissions	0.2	0.9	1.6	<0.1	0.6	0.2
Total	***0.8***	***6.7***	***7.8***	***<0.1***	***0.9***	***0.4***
Pit Backfilling						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.7	0.2
Total	***0.7***	***5.9***	***9.1***	***<0.1***	***0.9***	***0.4***
Roadway Repaving						
On-Site Emissions	0.5	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.7***	***4.9***	***7.8***	***<0.1***	***0.7***	***0.3***
Simultaneous Regulating Stations Work Zone Analysis						
Maximum Regional Emissions	**1.5**	**18.1**	**18.2**	**<0.1**	**2.7**	**1.0**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Maximum Localized Emissions	**1.2**	**11.6**	**14.3**	**<0.1**	**1.1**	**0.5**
SCAQMD SRA 6 LST	-	103	426	-	4	3
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Note: Emission modeling files can be found in Appendix A.
Source: TAHA, 2021.

Based on the combined activities analysis and the regulating stations analysis, construction of the proposed project would not have any potential to conflict with or obstruct implementation of the AQMP based on the air quality violation criterion. When considering five active work zones with each zone producing its maximum daily emissions, total regional and localized NO_X emissions would remain below half of the applicable thresholds. Localized particulate matter emissions from the combined sites would remain below the LST values that apply to a singular one-acre construction site within Source Receptor Area (SRA) 6.

Upon completion of construction activities, vehicle and equipment sources involved with the proposed project would no longer be active and producing emissions. The construction workforce would comprise LADWP crews and contractors assembled from the local area and is not anticipated to introduce new permanent job growth to the region. Construction of the proposed project would have no impact related to the second AQMP consistency criterion related to assumptions incorporated into the regional growth forecasts for population, housing, and employment within the City of Los Angeles.

Operation

Operational activities associated with the proposed project would be minimal, and no new permanent sources of air pollutant emissions would be introduced to the project area. The entirety of proposed project facilities would be located underground, and implementation of the proposed project would not expand the LADWP workforce. The occasional vehicle trips to the project site would produce negligible emissions of air pollutants at the regional level. Operation of the proposed project would not have any potential to exacerbate the frequency or severity of air quality violations. The impact related to air quality emissions would be less than significant.

The second consistency criterion requires that the proposed project not exceed the assumptions in the AQMP, thereby rendering the regional emissions inventory inaccurate. Implementation of the proposed project would not introduce new population, housing, and employment projections for the region and there would be no potential to result in growth that would exceed the projections incorporated into the AQMP or the RTP/SCS. The proposed project would not interfere with air pollution control measures listed in the 2016 AQMP and would not conflict with the goals of the City of Los Angeles General Plan Air Quality Element.

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?

Less Than Significant Impact. The SCAB is currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ under the state standards and nonattainment for O_3 and $PM_{2.5}$ under the federal standards. Therefore, a project may result in a cumulatively considerable air quality impact under this criterion if daily emissions of ozone precursors (VOC and NO_X) or particulate matter (PM_{10} and $PM_{2.5}$) exceed applicable air quality thresholds of significance established by the SCAQMD. The SCAQMD designed the regional mass daily thresholds and LST values to prevent projects from exceeding the ambient air quality standards and potentially resulting in air quality violations that could obstruct or delay implementation of the AQMP. The SCAQMD suggests that if any quantitative air quality significance threshold is exceeded by an individual project during construction activities or operation, that project is considered cumulatively considerable and would be required to implement effective and feasible mitigation measures to reduce air quality impacts.

Conversely, the SCAQMD has determined that if an individual project would not exceed the regional mass daily thresholds or LST values, then it is generally not considered to be cumulatively significant. This method of impact determination allows for the screening of individual projects that would not represent substantial new sources of emissions in the SCAB; it also serves to exclude smaller projects from the responsibility of identifying potentially concurrent new or proposed construction and operation emissions nearby since the incremental contribution to regional emissions is minor.

Construction

As shown in Table 1 through Table 5, above in Section III(a) of Chapter 3 of this IS/MND, construction of the proposed project would not generate emissions in excess of any of the applicable regional or localized thresholds established by the SCAQMD. All construction activities would be conducted in accordance with the BMPs pursuant to SCAQMD Rule 403 to minimize fugitive dust emissions. Emissions produced during construction activities associated with the proposed project would not be cumulatively considerable, and this impact would be less than significant.

Operation

Following the completion of construction activities, all major components of the proposed project would be located underground and would not generate emissions of air pollutants. Implementation of the proposed project would not introduce any land use developments or LADWP facilities that would generate new vehicle trips or install new stationary sources of emissions. Therefore, the proposed project would not generate cumulatively considerable emissions of ozone precursors or particulate matter and impacts would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact.

Construction

The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the SCAB. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in Table 1 through Table 5, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Additionally, the use of construction equipment in any particular location would be intermittent and temporary, such that nearby residential, educational, and medical sensitive receptors would not be exposed to recurring high levels of emitted pollutants.

With regards to emissions of air toxic contaminants (TAC), carcinogenic risks, and non-carcinogenic hazards, off-road equipment exhaust would contain diesel particulate matter, which is the most prevalent air toxic in the greater Los Angeles region. However, each individual piece of equipment would only be in operation for a portion of the workday. Carcinogenic risks are typically assessed on timescales of several years to multiple decades, as the risk accumulates over extended periods of exposure. Given that construction activities would only be occurring during the daytime when the atmospheric inversion layer is at its highest and the greatest amount of pollutant dispersion occurs, there is little potential for TAC concentrations to reach levels that would be hazardous for nearby sensitive receptors. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of air pollution, and impacts would be less than significant.

Operation

Following the completion of construction activities, operation of the proposed project would not involve any active sources of air pollutant emissions. There would be no potential for sensitive receptors located along the proposed project corridor to be exposed to substantial pollutant concentrations resulting from sources associated with the proposed project. Operation of the proposed project would result in no impact related to sensitive receptor exposures to pollutant concentrations.

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

Less Than Significant Impact.

Construction

Odors are the only potential construction emissions other than the sources addressed above. Potential sources that may produce objectionable odors during construction activities include equipment exhaust and the application of asphalt. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. LADWP will ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, the proposed project would result in a less than significant impact related to construction odors and other nuisances.

Operations

The operation of the project has no potential to generate new, adverse odors. Therefore, the proposed project would result in no impacts related to operational odors or other emissions that may have the potential to cause a public nuisance.

IV. BIOLOGICAL RESOURCES

Potential impacts to biological resources associated with the proposed project were determined from the results presented in the Biological Resources Memorandum prepared for the proposed project, which is included as Appendix B to this IS/MND.

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted prior to conducting a field survey. The project runs east-west along Roscoe Boulevard and occurs entirely within the northwestern portion of the U.S. Geological Survey's Canoga Park quadrangle. A search of this quadrangle and the surrounding eight quadrangles, including Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills was made of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and of the California Native Plant Society's

(CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity.

The project area evaluated for biological resources includes the proposed pipeline alignments, which would be entirely within paved public streets, plus a 500-foot survey buffer around the alignments, which combined represent the Biological Survey Area (BSA). A field survey of the study area was conducted on June 9, 2021, to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. The entire BSA for the proposed project is urbanized, primarily by residential development, with some areas of commercial and institutional development. No open spaces, parks, or similar areas occur within the BSA.

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 Wildlife or U.S. Fish and Wildlife Service?**

Less Than Significant Impact. A significant impact could occur if the proposed project removed or modified the habitat for, or otherwise directly or indirectly affected, any species identified or designated as a candidate, sensitive, or special status species in local or regional plans, policies, or regulation, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS).

Special-Status Plants

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the USFWS under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered Species Act (CESA), and or those listed by the California Native Plant Society (CNPS).[6,7,8] The CNPS inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

A total of 60 sensitive plant species were identified from the CNDDB[9] and CNPS[10] database searches to have historically been recorded from the Canoga Park and

6 Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

7 Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

8 Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq*.).

9 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

10 California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants (online edition, v9-01 0.0). Available at: http://www.rareplants.cnps.org/. Accessed June 4, 2021.

surrounding eight quadrangles (a land area of nearly 100 square miles), and from a search of IPaC[6] for the Project vicinity, including the 16 federal and/or State-listed species. However, no records of special-status plant species coincide with the BSA, and no naturally occurring special-status plant species were observed in the BSA during the field survey. One special-status plant species, the southern California black walnut (*Juglans californica*), was noted within the BSA during the field survey as introduced specimens on private residential properties adjacent to the project alignment but outside the public road right-of-way or on side streets off the project alignment, where they would not be impacted during project implementation.

Vegetation within the BSA consists primarily of plantings of non-native ornamental trees and shrubs and areas of lawn associated with residential landscapes. No native plant communities occur within or adjacent to the BSA. Non-native ornamental species and occasional native species common to residential and commercial properties within the City occur within the BSA.

Mature southern California walnut trees are also protected under the City of Los Angeles Native Tree Protection Ordinance, as are western sycamore trees (*Platanus racemosa*), which were also identified in the BSA. Individuals of these species all occur on private residential properties and outside the public road right-of-way or on side streets off the project alignment where they will not be impacted. In addition, no USFWS-designated Critical Habitat for any special-status plant species coincides with the BSA.

<u>Construction</u>

No naturally-occurring federal- or state-listed plant species were identified during the field survey, and none are expected to occur in the BSA due to a lack of potentially suitable habitat. As a result, significant direct impacts on special-status plants are not anticipated. Introduced specimens of one special-status species, the southern California black walnut, was noted within the BSA during the field survey outside the public road right-of-way, where they would not be impacted during project implementation. In addition, no vegetation would be removed during implementation of the proposed project. All work would occur within paved roadways. As a result, direct impacts to vegetation are not anticipated.

Indirect impacts to special-status plant species occurring outside the project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, stormwater runoff. If such impacts were to occur, they would be considered significant. However, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project. As a result, indirect impacts to special-status plants are not anticipated.

<u>Operation</u>

No vegetation, including introduced specimens of southern California black walnut, would be impacted during operations and routine maintenance of the project, which is located entirely within the paved road right-of-way.

Sensitive Wildlife Species

Special-status wildlife species include those listed by USFWS under FESA and by CDFW under CESA. USFWS and CDFW officially list species as either threatened, endangered, or as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the Migratory Bird Treaty Act (MBTA), and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under California Fish and Game Code (CFGC) Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank. [11] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process under CEQA. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

A total of 55 wildlife species were identified from the CNDDB[12] search of the Canoga Park and surrounding eight quadrangles and from a search of IPaC[13] for the project vicinity, including the 19 federal and/or State-listed wildlife species. A CNNDB record of one special-status wildlife species, the Crotch bumble bee (*Bombus crotchii*), a candidate for listing as endangered under the CESA, coincides with the BSA. The record is from an observation in 1964 and is described as occurring within the community of Northridge. However, suitable habitat is currently absent from the BSA, and this species is not expected to occur. No special-status wildlife species were observed during the field survey. In addition, no USFWS-designated Critical Habitat for any special-status wildlife species coincides with the BSA.

Construction

No federal or State-listed wildlife species have been identified in the BSA, and potentially suitable habitat for such species is absent from the BSA. As a result, direct and indirect impacts to a federally and/or State-listed wildlife species is not anticipated and impacts to such would not be significant.

[11] California Department of Fish and Wildlife. 2019. California Natural Diversity Database (CNDDB). Special Animals List.

[12] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

[13] Information for Planning and Consultation. 2021. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed June 4, 2021.

However, ornamental trees in the BSA provide potentially suitable nesting habitat for urban bird species. As a result, birds protected by the MBTA and by CFGC have the potential to nest in the BSA. No vegetation would be removed during project implementation, and as a result, direct impacts to nesting birds or their associated habitat would be less than significant.

Indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, and increased human presence resulting from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. However, by implementing standard construction measures related to fugitive dust, erosion control, and noise, and by adhering to the BMP related to the MBTA (as discussed in Section 1.9 of Chapter 1 of this IS/MND), indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to less than significant.

Operation

Significant impacts to biological resources during operations and routine maintenance of the project are not anticipated. All project facilities would be located underground, and operational and maintenance activities would be conducted within paved roadways and would be similar to those prior to project implementation.

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

No Impact. Sensitive natural communities are those that are designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act [CWA] and/or Sections 1600 et seq. of the CFGC).

Based on a review of the CNDDB,[14] 13 sensitive vegetative communities have been recorded within the Canoga Park and surrounding eight quadrangles, including California Walnut Woodland, Cismontane Alkali Marsh, Riversidean Alluvial Fan Sage Scrub, Southern California Coastal Lagoon, Southern California Steelhead Stream, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, Valley Needlegrass Grassland, and Valley Oak Woodland. These communities are documented in the CNDDB two miles plus to the north and northeast of the BSA.

No sensitive natural communities occur within the BSA. Vegetation consists primarily of non-native ornamental trees and shrubs that are common in urban environments. However, the proposed project alignment crosses Aliso Canyon Wash, an aquatic feature under regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB). Both the proposed truck line and the distribution mainline on Roscoe Boulevard would be installed via

14 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

the microtunneling method beneath the channel, and as a result, no work would occur in or impact the channel. Therefore, there would be no impact to sensitive natural communities.

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?

No Impact. Wetlands are defined as areas that are inundated by surface or ground water with a frequency sufficient to support under normal circumstances a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands do not occur within the BSA; as such, there would be no impacts to state or federally protected wetlands.

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/breeding sites?

No Impact. In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat areas or between a habitat area and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways. Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those allowing resident wildlife to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

The project is aligned through a completely urbanized area of the San Fernando Valley and located within existing paved roadways. The BSA does not occur within or intersect a recognized or established regional wildlife corridor; however, the proposed alignment intersects Aliso Canyon Wash. This channel may provide opportunities for localized wildlife movement within the urbanized San Fernando Valley. Additionally, the channel extends north into undeveloped areas of the Santa Susanna Mountains, potentially providing a corridor from the urbanized San Fernando Valley into green/open space areas that may provide more suitable opportunities for wildlife. However, fencing along the channel restricts wildlife access, and the concrete-encased nature of the channel provides little cover, resting, foraging, or nesting opportunities for wildlife, limiting the channel's suitability to serve as a significant wildlife corridor.

Ornamental trees within and adjacent to the BSA provide some opportunities for cover, resting, foraging, and nesting to localized bird populations; however, they do not provide functions as a significant wildlife movement corridor.

Construction

The BSA does not serve as a regional wildlife corridor and as a result, direct impacts to a regional wildlife movement corridor would not occur. While Aliso Canyon Wash could provide opportunities for local wildlife movement (particularly nocturnal species), no work would occur in the channel, and no night work is proposed.

Therefore, project construction activities are not anticipated to impact the channel's potential to facilitate wildlife movement. As a result, there would be no impact from project construction activities to a wildlife movement corridor.

Operation

Project operations activities would be conducted within paved roadways and would be similar to those currently conducted. As a result, operation and maintenance activities of the project are not anticipated to affect wildlife movement, and there would be no impact.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (e.g., oak trees or California walnut woodlands)?

No Impact. In response to the City's declining oak tree population, the City enacted an oak tree protection ordinance in 1982. To further slow the decline of native trees, the City amended the two City Municipal Code sections pertaining to oak trees in April 2006 to include southern California black walnut, western sycamore, and California bay (*Umbellularia californica*) (Section 17.02 of City Municipal Code). These trees must be four inches or greater in diameter at 4.5 feet above ground to be considered protected. The Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged, relocated or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture.

California black walnut and western sycamore trees protected under the City of Los Angeles Native Tree Protection Ordinance were identified in the BSA during the field survey. These species occur on private residential properties adjacent to the project alignment or along side streets, where they will not be impacted by the project. In addition, no trees are currently proposed for removal as part of the project. As a result, no impacts would occur to ordinance-protected trees.

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?

No Impact. The proposed project is not located within an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan area. Therefore, no impact would occur.

V. CULTURAL RESOURCES

Potential impacts related to cultural resources resulting from implementation of the proposed project were determined from the results presented in the Cultural Resources Technical Memorandum prepared for the proposed project, which is included as Appendix C to this IS/MND.

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations Section 15064.5?

No Impact. Archival research for the proposed project was conducted in May 2021, which included a review of South Central Coastal Information Center (SCCIC) provided site records and report data, historical site and property inventories, and historical maps. Inventories of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California State Built Environment Resource Directory (BERD), California Historical Landmarks and Points of Interest, and the list of City of Los Angeles Historic-Cultural Monuments (LAHCMs) were also reviewed to identify cultural resources within the study area. Supplemental research in published and unpublished sources was also conducted to provide prehistoric and historic contexts for the project area. The research focused on the identification of previously recorded cultural resources and cultural resources reports within the study area, which comprises the project Area of Potential Effect (APE) and a 0.5-mile buffer. The horizontal APE is the boundary of the road right-of-way for Roscoe Boulevard, Reseda Boulevard, and Penfield Avenue. The vertical APE is confined to the approximate maximum depths of excavation for the project which range between 10 and 20 feet below surface.

A resource is generally considered "historically significant" if the resource meets at least one of the four criteria for listing on the CRHR (Public Resources Code Section 5024.1[a]). The CRHR is used as a guide by state and local agencies, private groups, and citizens to identify the state historical resources and to include which properties are to be protected, to the extent prudent and feasible, from substantial adverse change. The CRHR evaluation criteria are similar to the NRHP criteria. For a property to be eligible for inclusion in the CRHR, it must meet one or more of the following criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of California history and cultural heritage;

2. It is associated with the lives of persons important in our past;

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. It has yielded, or may be likely to yield, important information in prehistory or history.

The CRHR may also include various other types of historical resources that meet the criteria for eligibility, including the following:

1. Individual historic resources
2. Resources that contribute to a historic district
3. Resources identified as significant in historic resource surveys
4. Resources with a significance rating of Category 3 through Category 5 in the State Inventory (Categories 3 and 4 refer to potential eligibility for the NRHP; Category 5 indicates a property with local significance)

Although the NRHP standard includes the evaluation of resources that are 50 years old or older, the California Office of Historic Preservation (OHP) endorses recording and evaluating resources over 45 years of age to accommodate the five-year lag in the planning process.

Previously Recorded Cultural Resources

The SCCIC records search identified four previously recorded cultural resources mapped within the study area. The resources included one prehistoric isolate, one commercial property, one residential property, and one church. None of the resources are located within the proposed project APE.

California State Historic Resources Inventory

Study of the OHP's BERD focused on properties adjacent to streets within the APE, specifically Roscoe Boulevard and Reseda Boulevard. Two properties are listed in the BERD for Roscoe Boulevard and Reseda Boulevard within 0.5 miles of the APE. Both properties were determined ineligible for the National Register and not evaluated for the California Register or for Local Listing.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical interest. A search of the California Historical Landmarks list revealed no California Historic Landmarks within 0.5 mile of the APE.

Los Angeles Historic-Cultural Monuments

LAHCMs are sites in Los Angeles that have been designated by the Los Angeles Cultural Heritage Commission as worthy of preservation based on their architectural, historic, and cultural merits. A search of the LAHCMs found no monuments within the APE.

Los Angeles Historic Resources Inventory

The City of Los Angeles has conducted a comprehensive survey to identify significant historic resources under the SurveyLA program. The historic resources identified in the survey have been mapped on HistoricPlacesLA, an interactive map that depicts the Los Angeles historic resources inventory, including LAHCMs, Historic Preservation Overlay Zones, and resources identified as eligible for listing on local, state, or federal registers through the SurveyLA program. The data available in the HistoricPlacesLA inventory are updated as additional resources are identified and evaluated for areas not covered by SurveyLA. A search of resources in this database was limited to properties adjacent to streets within the project APE, including Roscoe Boulevard and Reseda Boulevard. Three historic resources were identified on the Los Angeles Historic Resources Inventory. These include a church, a car dealership (which since identified in the inventory has been demolished), and a liquor store sign. These resources are located outside of the project APE and would not be impacted as a result of the proposed project.

Based on the above assessment of historical resources in relation to the project APE and the fact that all project facilities would be located underground and would not be visible, there would be no adverse change in the significance of a historical resource, and no impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations Section 15064.5?

Less Than Significant Impact. An archaeological field survey of the study area was conducted on August 11, 2021, which involved a windshield survey along the project alignment with targeted examinations of unpaved areas adjacent to the APE. The purpose of the survey was to identify and record cultural resources that are at least 45 years old and evaluate any discovered resources for historical significance based on criteria for listing in the CRHR.

No archaeological resources were identified within the APE during the field survey or the archival search discussed in V(a), above. The project APE has no soil visibility because it is limited to the road right-of-way which is paved with asphalt. Targeted inspections of exposed soil adjacent to the project APE were conducted, and no archeological resources were noted.

Based on the results of the archival research and field survey, there is low potential that archaeological resources would be encountered during ground-disturbing activities for the proposed project construction. The site is located within a heavily disturbed urban area, and the project alignment has been subject to previous extensive road and underground utility construction activity. The primary roadways in the APE were initially developed in the early twentieth century and, by the mid-twentieth century, Roscoe Boulevard and Reseda Boulevard were well-developed transit routes lined with commercial and residential properties. The development process likely heavily impacted any prehistoric or early cultural remains that may have existed in the APE prior to development. One prehistoric isolate was encountered in the mid-20th Century on a residential property adjacent to the western end of the APE, but no additional traces of cultural material were observed. Therefore, the proposed project would not be expected to cause a substantial adverse change in the significance of a known archaeological resource.

Although not expected to occur due to the low potential in the APE, in the event of an inadvertent discovery of archaeological resources during construction activities, the proposed project would be subject to California Public Resources Code (PRC) Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. These provisions include immediately halting construction work in the vicinity of the find (within a 50-foot buffer), and LADWP retaining a qualified archaeologist meeting Secretary of Interior standards to evaluate the significance of and determine appropriate treatment for the resource in accordance with the provisions of CEQA Guidelines Section 15064.5 and the National Historic Preservation Act. If the resource is determined to be potentially of Native American in origin, Mitigation Measure (MM) TCR-1 would be required to mitigate potential impacts to a less than significant level (see Section XVIII of Chapter 3 of this IS/MND). If the archaeological resource is determined to be non-Native American in origin and is determined to be potentially significant, a treatment or avoidance plan shall be developed within 48-hours of the discovery. Work in the area may not resume until evaluation and treatment of the resource is completed or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while the evaluation and treatment of archaeological resources take place. For non-Native American archaeological resources, compliance with PRC Section 21083.2(i) as well as the implementation of the Cultural Resources Awareness Training BMP, as outlined in Section 1.9 of Chapter 1 of this IS/MND, would ensure that the impact would be less than significant.

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

Less Than Significant Impact. There are no cemeteries or known burial grounds located within the project vicinity. Based on the results of the archival research and field survey, there is low potential for such sites to be encountered during ground-disturbing activities. Additionally, soils throughout the project alignment have been substantially disturbed by previous subsurface construction activities, including road and utility construction. Although not expected to occur, in the event that human remains are discovered, the remains would be treated in accordance with all applicable regulations. In accordance with the provisions of the California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County Coroner would be notified. The coroner would provide recommendations concerning the treatment and disposition of the human remains within two working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission would immediately notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains and related resources, as well as provide input regarding the potential for other remains to be present. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted. Compliance with these existing regulations as well as the implementation of the Cultural Resources Awareness Training BMP, as outlined in Section 1.9 of Chapter 1 of this IS/MND, would ensure that the impact to human remains, including Native American remains, would be less than significant.

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?

Less Than Significant Impact. The following analysis discusses short-term (construction) and long-term (operational) use of electricity, natural gas, and petroleum related to the proposed project.

Electricity

Construction

Construction of the proposed project would require electricity for operation of electrically powered hands tools. However, electricity for construction activities would be provided by diesel generators. Electricity would be generated by on-site use of petroleum products. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of electricity.

Operation

The two pressure regulating stations would control water pressure by automatically adjusting for changes in flow. This requires a minimal use of electricity. Operation of the pressure regulating stations would not interfere with the existing electricity service infrastructure, nor would it impede LADWP efforts to expand its renewable resources. Therefore, implementation of the proposed project would have a less than significant impact related to operational electricity consumption.

Natural Gas

Construction

Construction activities typically do not require the consumption of natural gas to power equipment or heavy machinery. Natural gas that would be consumed during construction would be negligible and would not result in a significant drain on natural gas resources. Therefore, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Operation

Future operation of the proposed project would not use natural gas. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of natural gas.

Petroleum

Construction

Petroleum fuels would be consumed during construction activities by heavy-duty equipment and on-road delivery and haul trucks, which are usually diesel powered, as well as on-road vehicles used by the construction crews, which are usually gasoline powered. Table 6 shows that approximately 658,492 gallons of diesel fuel and 102,620 gallons of gasoline would be needed to construct the proposed project. Averaged over the 7-year construction timeline, equipment and vehicles employed to construct the proposed project would consume approximately 94,070 gallons of diesel fuel and 14,660 gallons of gasoline per year. The proposed project would use best practices to eliminate the potential for the wasteful consumption of petroleum. Exported materials (e.g., demolition debris and soil hauling) would be disposed of at the closest facility that is able to accept such materials, and the proposed project would be required to comply with CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to five minutes. Therefore, because petroleum use would be minimized to the extent feasible and represents a relatively low level of fuel consumption, construction of the proposed project would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum.

Table 6: Construction Petroleum Demand

Source	Gallons
Diesel	
Off-Road Equipment	**344,827**
Vendor Delivery Trips	**84,330**
Disposal Hauling Trips	**229,335**
Total Diesel Consumption	**658,492**
Annual Average Consumption	***94,070***
Gasoline	
Construction Crew Trips	**102,620**
Total Gasoline Consumption	**102,620**
Annual Average Consumption	***14,660***

Source: CARB, 2018; USEPA, 2020; TAHA, 2021.

Operation

Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. No additional permanent LADWP workforce would be required to operate the RTLR. Periodic maintenance would require a small amount of transportation fuel for site inspections. Furthermore, by replacing the existing trunk line the RTLR Project would reduce the necessary frequency of maintenance and servicing trips to the trunk line compared to existing maintenance requirements. Therefore, operation of the proposed project would not result in a significant impact related to wasteful, inefficient, or unnecessary consumption of petroleum products.

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

No Impact. There is no potential for the project to conflict with renewable energy or energy efficiency plans. The proposed project would not use a significant amount of transportation fuel, electricity, or natural gas during either construction or operations. Therefore, the proposed project would result in no impact related to energy plans and 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:

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 California Geological Survey Special Publication 42.

Less Than Significant Impact. There are numerous earthquake faults in the project vicinity, but the RTLR alignment does not cross an Alquist-Priolo Earthquake Fault Zone or other known fault zone.[15] [16] The proposed project does not include the construction of any habitable structures, nor would the use of the project site change following the proposed project. The proposed RTLR and all appurtenances would be constructed in accordance with the latest version of the City of Los Angeles Building Code and other applicable federal, state, and local codes associated with seismic criteria, including, but not limited to, appropriate pipe joint design and adequate shoring during excavation activities. In addition, the use of ERDIP would increase the resilience of the trunk line and distribution mainlines. Therefore, the proposed project would result in a less than significant impact related to fault rupture.

ii) Strong seismic ground shaking?

Less Than Significant Impact. The proposed RTLR alignment is located within the seismically active Southern California region, and like all locations within the area, is subject to strong seismic ground shaking. However, as discussed in Section VI(a)(i) above in Chapter 3 of this IS/MND, the RTLR and all appurtenances would be constructed in accordance with applicable federal, state, and local codes associated with seismic criteria, and would use ERDIP to increase the resilience of the trunk line and distribution mainlines. As such, the proposed project would result in a less than significant impact related to fault rupture.

15 California Department of Conservation, CGS Earthquake Hazard Zones: Fault Traces Map, available at: https://gis.conservation.ca.gov/server/rest/services/CGS_Earthquake_Hazard_Zones/SHP_Fault_Traces/MapServer, accessed on February 15, 2021.

16 United States Geologic Survey, Quaternary Fault and Fold Database of the United States, Interactive Map, available at: https://doi.org/10.5066/F7S75FJM, accessed February 15, 2021.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. The project site is located within a City-designated liquefaction area.[17] However, as discussed above, the proposed RTLR and all appurtenances would be designed and constructed in compliance with applicable federal, state, and local codes to minimize impacts related to seismic ground failure, and would use ERDIP to increase the resilience of the trunk line and distribution mainlines. The impact would be less than significant.

iv) Landslides?

No Impact. The proposed RTLR alignment is located within existing paved roadways and does not traverse any hillside areas. No portion of the proposed RTLR alignment is located within or adjacent to a designated landslide or hillside area.[18] Therefore, no impact related to landslides would occur.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The proposed project would be located within existing paved roadways. Construction activities would include trenching for the proposed RTLR within these roadways. The soil removed during excavation would not be stockpiled on site but loaded onto trucks and hauled to a local landfill for proper disposal. Since soil exposed through excavation would be entirely contained within the trenches, which would be properly shored to retain the trench walls, substantial erosion or loss of topsoil would not occur. The impact would be less than significant.

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?

Less Than Significant Impact. As discussed above in Sections VI(a)(iv) of Chapter 3 of this IS/MND, there would be no impact related to landslides. As discussed in Section VI(a)(iii) of Chapter 3 of this IS/MND, impacts related to liquefaction would be less than significant. This would include lateral spreading, which is a type of liquefaction-induced ground failure on mildly sloping ground.

Subsidence is the lowering of surface elevation due to changes occurring underground, such as the extraction of large amounts of groundwater. The proposed project would include construction methods to control the amount of groundwater dewatering, including the use of interlocking steel sheet piles as shoring material in deeper areas of excavation (e.g., microtunneling shafts and regulating station sites) to help control groundwater intrusion. A closed-face slurry shield MTBM would be employed for tunneling, which would permit tunneling where groundwater may be encountered and limit groundwater intrusion into the launching and receiving shafts, also minimizing the need for dewatering. With construction methods to minimize dewatering, impacts related to subsidence would be less than significant.

17 ZIMAS, available at: http://zimas.lacity.org/, accessed February 15, 2021.

18 City of Los Angeles Department of City Planning, *City of Los Angeles General Plan Safety Element*, Exhibit C, adopted November 26, 1996. Website: http://planning.lacity.org/cwd/gnlpln/saftyelt.pdf, accessed March 5, 2018.

Collapsible soils consist of unconsolidated, low-density materials that may collapse and compact under the addition of excessive water or loading. These types of soils are not expected to be encountered within the proposed RTLR alignment. Pipeline trenches would be backfilled with higher-density soil-cement slurry, which is not subject to collapse. Therefore, the impact would be less than significant.

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

No Impact. Expansive soils are clay-based soils that tend to expand (increase in volume) as they absorb water and contract (lessen in volume) as water is removed. The proposed RTLR alignment is not underlain by such clay-based soils. Furthermore, in areas of open-trench installation, the trench would be backfilled with a stable soil-cement slurry, which is not subject to expansion and contraction. Therefore, there would be no impact.

e) Have soils incapable of adequately supporting use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The proposed project would not include septic tanks or other alternative wastewater disposal systems. Therefore, no impacts associated with septic tanks or alternative wastewater disposal systems would occur. No impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. Geologic maps indicate that the project lies within an area mapped as having surficial deposits of Quaternary alluvium and older young alluvial fan deposits. No known fossil specimens have been identified in the project alignment. However, fossilized remains have been encountered in similar older quaternary alluvial deposits nearby. Soils at relatively shallow depths can reasonably be assumed to have been disturbed in the recent past by the construction and maintenance of roads and utilities, as well as by natural weathering. Shallow excavations in the proposed project alignment are unlikely to yield intact fossils.

The east and west ends of the project alignment exhibit older young alluvial fan deposits from the late Pleistocene, and greater depths in the center of the alignment may exhibit older Quaternary alluvial sediments. Deeper excavations within the project alignment, which may extend as far as 20 feet below surface, have low to moderate potential to encounter fossil deposits. While it is not anticipated that paleontological resources would be encountered during project construction, in the event previously unknown paleontological resources are encountered, the construction manager would halt construction activities in the immediate area in accordance with CEQA Guidelines Section 15064.5(f). LADWP would retain a qualified paleontologist to make an immediate evaluation of the significance and appropriate treatment of the resource. Construction activities may continue on other parts of the construction site while evaluation and any necessary treatment of paleontological resources take place. Compliance with these existing policies would ensure that the impact to paleontological resources would be less than significant.

VIII. GREENHOUSE GAS EMISSIONS

Potential impacts related to greenhouse gas emissions associated with the proposed project were determined from the results presented in the Greenhouse Gas (GHG) Emissions Assessment prepared for the proposed project, which is included as Appendix D to this IS/MND.

Would the project:

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

Less Than Significant Impact. The proposed project would generate GHG emissions exclusively from construction activities. Operation of the proposed project following the completion of construction would not introduce any new permanent sources of GHG emissions to the project area. The installation of the new trunk line could ultimately reduce the frequency of required maintenance and service visits for the proposed project in the future.

Table 7 presents the estimated GHG emissions that would be generated by construction of the proposed project over the 7-year schedule, indicating average annual emissions. Emissions modeling estimated that construction of the proposed project would produce approximately 7,400.3 $MTCO_2e$ in total over the 7-year implementation timeline, which equates to approximately 1,057.2 $MTCO_2e$ annually on average. The annual average GHG emissions would be substantially below the SCAQMD recommended screening threshold for both industrial projects (10,000 $MTCO_2e$) and residential/commercial projects (3,000 $MTCO_2e$).[19] Emissions would not persist beyond the completion of construction activities. Therefore, implementation of the proposed project would result in a less than significant impact related to GHG emissions.

Table 7: Proposed Project Construction Activities Greenhouse Gas Emissions

Component/Source	Greenhouse Gas Emissions ($MTCO_2e$)
RTLR Open-Trench Construction	
Off-Road Equipment	1,557.4
Disposal Hauling Trucks	1,322.0
Material Delivery Trucks	179.5
Construction Crew Vehicles	605.4
Subtotal	***3,664.4***
RTLR Microtunnel Construction	
Off-Road Equipment	1,068.2
Disposal Hauling Trucks	826.3
Material Delivery Trucks	626.9
Construction Crew Vehicles	157.9
Subtotal	***2,679.3***
Distribution Mainline Open Trench	
Off-Road Equipment	401.9
Disposal Hauling Trucks	191.0
Material Delivery Trucks	62.1
Construction Crew Vehicles	102.7
Subtotal	***757.6***
Regulating Stations	
Off-Road Equipment	110.1

19 Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #15, 2010. SCAQMD. Available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf, accessed January 7, 2022.

Disposal Hauling Trucks	116.3
Material Delivery Trucks	30.2
Construction Crew Vehicles	42.5
Subtotal	***299.1***
Total	**7,400.3**
Annual Average Rate	***1,057.2***

Source: TAHA, 2021.

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

No Impact. There is no potential for the proposed project to conflict with GHG reduction plans. Implementation of the proposed project would not introduce any permanent, long-term sources of GHG emissions. As previously discussed, the replacement of the existing trunk line would reduce the frequency of necessary maintenance and servicing trips. The proposed project would be consistent with applicable GHG emissions reduction plans, including California's 2017 Climate Change Scoping Plan and SCAG 's Connect SoCal 2020–2045 RTP/SCS as well as Los Angeles Mayor Eric Garcetti's 2017 Green New Deal, which, among other initiatives, includes goals to provide a reliable and efficient water distribution system.

Proposed project GHG emissions related to construction would be well below the SCAQMD recommended CEQA screening threshold for both industrial and residential/commercial projects. GHG emissions are regionally cumulative in nature, and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and CARB regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements related to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements, including idling time restrictions, would ensure that construction of the proposed project would not conflict with GHG emissions reductions efforts.

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?

Less Than Significant Impact. Construction of the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Construction activities would include the use hazardous materials typical of construction (i.e., fuel and lubricants for construction equipment). These materials are not considered acutely hazardous. All handling, storage, and disposal of these materials are regulated by the California Department of Toxic Substances Control, EPA, and the Los Angeles Fire Department. Construction of the proposed project would also involve the excavation and transport of demolished paving materials (e.g., asphalt, concrete, road bed fill materials that could possibly be contaminated by vehicle-related pollution (e.g., oil, gasoline, diesel, other automotive chemicals). The transport and disposal of construction-related hazardous materials would comply with applicable health and safety laws and regulations. Operation of the proposed project would not require the routine transport, use, or disposal of hazardous materials as the proposed RTLR would carry drinking water. With adherence to applicable regulations, the impact related to the routine transport, use, or disposal of hazardous materials would be less than significant.

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?

Less Than Significant Impact. As discussed above, construction activities for the proposed project would involve the limited transport, storage, and use of hazardous materials, such as fuel for construction equipment. These types of materials, however, are not acutely hazardous, and all storage, handling, and disposal of these materials would comply with existing regulations. The operation of the RTLR would not involve the use of hazardous materials. Compliance with regulations would ensure a less than significant impact related to creating a significant hazard to the public through reasonably foreseeable upset or 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?

Less Than Significant Impact. Portions of the proposed RTLR alignment are located within one-quarter mile of schools. However, as discussed in Sections VIII(a) and (b) of Chapter 3 of this IS/MND, construction of the proposed project would involve the limited use of hazardous materials, such as fuel and lubricants, which are not considered acutely hazardous, and would not emit hazardous emissions. These materials would be handled in accordance with applicable federal, state, and local regulations regarding storage, use, and disposal. Compliance with existing regulations would ensure a less than significant impact related to handling of these materials within one-quarter mile of an existing school.

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

Less Than Significant Impact. The proposed project would be located within public roadway rights-of-way. There are several Leaking Underground Storage Tank (LUST) cleanup sites located adjacent to and within the proposed RTLR alignment; however, all LUST cleanup sites are completed and closed.[20] Therefore, the proposed project would not be located on a hazardous materials site and would not result in a hazard to the public or the environment. As such, the impact would be less than significant.

[20] California Department of Toxic Substances Control, EnviroStor interactive map of LUST cleanup sites. Website: https://www.envirostor.dtsc.ca.gov/public/map/?global_id=38330005, accessed on December 28, 2021.

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 airport to the proposed RTLR is Van Nuys Airport, located approximately 1 mile east of the eastern portion of the RTLR alignment. However, the proposed project would be located within public roadway rights-of-way and would be entirely underground once completed. As such, the proposed project would not result in a safety hazard for people residing or working in the project area or pose a hazard to aircraft operations. There would be no impact.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed project involves installation of a trunk line within public roadway rights-of-way. As previously discussed, the installation of the proposed RTLR would require the establishment of temporary work areas that would occupy traffic lanes, which would result in the closure of traffic lanes in the segment under construction. A minimum of one vehicle travel lane in each direction would be maintained at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. Roscoe Boulevard is not a designated primary or secondary disaster route.[21] However, a Traffic Management Plan would be prepared in coordination with the City of Los Angeles Department of Transportation (LADOT) for the proposed project and would detail construction traffic control and detour measures. Implementation of the Traffic Management Plan as well as implementation of the BMP related to agency coordination for construction schedules and worksite traffic control and detour plans, as outlined in Section 1.9 of Chapter 1 of this IS/MND, would ensure that impacts related to emergency response plans would be less than significant. Following installation of the proposed RTLR, all roadways would be returned to their existing conditions. Therefore, no long-term impacts would result from operation of the proposed project. The impact would be less than significant.

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

No Impact. The proposed project is located within urban areas of the City of Los Angeles and is not located within a City or State-designated Very High Fire Hazard Severity Zone.[22,23] Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, and no impact would occur.

21 Los Angeles County Department of Public Works, City of Los Angeles Valley Area Disaster Route Map, available at https://pw.lacounty.gov/dsg/disasterroutes/map/Los%20Angeles%20Valley%20Area.pdf, accessed January 6, 2022.

22 ZIMAS, available at: http://zimas.lacity.org/, accessed February 11, 2021.

23 State of California and the Department of Forestry and Fire Protection (CAL FIRE), Very High Fire Hazard Severity Zone Map, available at: https://osfm.fire.ca.gov/media/5830/los_angeles.pdf, accessed on: February 11, 2021.

X. HYDROLOGY AND WATER QUALITY

Would the project:

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

Less Than Significant Impact. The proposed project would require earthwork, including trenching and other excavation for installation of the trunk line and associated facilities, which may temporarily increase the potential for soil erosion. Construction activities would result in the disturbance of more than one acre of soil and would be required to obtain a Construction General Permit, issued by the State Water Resources Control Board. In accordance with the Construction General Permit and as outlines in Section 1.9 of Chapter 1 of this IS/MND (Best Management Practices), a project-specific SWPPP would be developed and implemented to control pollutants in stormwater discharges during construction activities. The SWPPP would identify structural and nonstructural measures, such as erosion and sediment control, general housekeeping practices, and inspection for leaks and spills from construction vehicles and equipment that would be implemented during construction of the proposed project. During post-construction operation, the proposed project facilities would carry drinking water and would not have the potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Adherence to existing requirements and implementation of the SWPPP would ensure a less than significant impact during project construction.

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

Less Than Significant Impact. Construction activities would require water for dust control. Water for this purpose would be from existing water supplies and is anticipated to require a relatively small volume in relation to the existing supplies. As discussed in Section VII(c) of Chapter 3 of this IS/MND, groundwater may be present at the depths of the shafts and tunneling spans in various locations within the project limits. Interlocking steel sheet piles would be used as shoring material and a closed-face slurry shield MBTM would be used for tunneling to minimize groundwater intrusion and the need for dewatering. Therefore, construction impacts to groundwater supply would be less than significant. There would be no operational impacts to groundwater supply because the RTLR would replace an existing trunk line and would not increase the use of drinking water. As such, the project would not substantially deplete groundwater supplies or interfere with groundwater recharge, and impacts would be less than significant.

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

i) Result in substantial erosion or siltation on- or offsite?

No Impact. The proposed RTLR alignment would be located within the existing road right-of-way, and as such, would not alter the existing drainage pattern of the area. Neither open-trench nor microtunneling construction methods would result in substantial erosion. The proposed RTLR would be located underground, and no impacts to existing drainage patterns would occur. Therefore, there would be no impact.

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

No Impact. The proposed RTLR alignment would be located within the existing road right-of-way, and as such, would not alter the existing drainage pattern of the area. Neither open-trench nor microtunneling construction methods would result in a substantial increase in the rate of surface runoff, or result in on- or off-site flooding. The proposed RTLR would be located underground, and no impacts to existing drainage patterns would occur. Therefore, there would be no impact.

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

No Impact. The proposed RTLR alignment would be located within the existing road right-of-way, and as such, would not alter the existing drainage pattern of the area. Neither open-trench nor microtunneling construction methods would result in a substantial increase in the rate of surface runoff that would exceed the capacity of existing or planned stormwater drainage systems or contribute substantial additional sources of polluted runoff. The proposed RTLR would be located underground, and no impacts to drainage patterns would occur. Therefore, there would be no impact.

iv) Impede or redirect flood flows?

No Impact. A 100-year flood is a flood defined as having a 1.0 percent chance of occurring in any given year. The proposed RTLR alignment is not located within a 100-year flood hazard zone.[24] No impact related to the alteration of the existing drainage pattern resulting in impeding or redirecting flood flows would occur.

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

No Impact. As discussed in Section X(c)(iv) of Chapter 3 of this IS/MND, the proposed RTLR alignment is not located within a 100-year flood hazard zone, and there would be no impacts related to flood hazards.

Tsunamis affect low-lying areas along the coastline. The project site is located approximately 12.7 miles north of the Pacific Ocean and is not located within a designated Tsunami Hazard Area.[25] No impact would occur.

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24 Federal Emergency Management Agency, FEMA Flood Map Service Center. Website: https://msc.fema.gov/portal, accessed March 6, 2018.

25 City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Safety Element*, available at: https://planning.lacity.org/odocument/31b07c9a-7eea-4694-9899-f00265b2dc0d/Safety_Element.pdf, accessed April 26, 2021.

Seiches are oscillations of the water surface generated in enclosed bodies of water, often as a result of earthquake related ground shaking. A seiche wave has the potential to overflow the sides of a containing basin to inundate adjacent or downstream areas. Seiches primarily cause damage to properties that are adjacent to a body of water. Due to the distance between the proposed RTLR and the nearest bodies of water there would no risk of seiche resulting in damage to the proposed project. No impact would occur.

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

No Impact. As previously discussed, a project-specific SWPPP would be developed and implemented to control pollutants in stormwater discharges during construction activities. Operation of the proposed project would not create runoff in excess of or in varying quality to existing conditions. The project would not substantially deplete groundwater supplies. Therefore, the project would not obstruct implementation of a water quality control plan or sustainable groundwater management plan. No impact would occur.

XI. LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The proposed RTLR alignment would be located within existing roadways. The installation of pipelines within the road right-of-way would necessitate temporary vehicle lane closures. However, no streets or sidewalks would be permanently closed as a result of the proposed project. Following installation of the proposed project, the roadways would be returned to their existing conditions, and no separation of uses or disruption of access between land use types would occur. As such, the proposed project would not physically divide an established community, and there would be no impact.

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

No Impact. The proposed RTLR alignment would be located entirely underground and within the boundaries of existing roadways. Thus, the proposed project would not conflict with existing land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.

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?

No Impact. The proposed project is entirely located within an area designated as MRZ-1, meaning an area where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.[26] Thus, there are no mineral resources of value to the region and the residents of the state identified within the project alignment, and no impact would occur.

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?

No Impact. The proposed project alignment is not delineated as a locally-important mineral resource recovery site in the General Plan.[27] The project alignment is entirely located within an MRZ-1 area. Therefore, implementation of the proposed project would not result in the loss of availability of a locally-important mineral resource recovery site, and no impact would occur.

XIII. NOISE

Potential impacts related to noise resulting from implementation of the proposed project were determined from the results presented in the Noise Technical Memorandum prepared for the proposed project, which is included in Appendix E to this IS/MND.

The standard unit of measurement for noise is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, the noise measurements reflected in this analysis are given in dB reflecting the normal hearing sensitivity range of the human ear, known as the A-weighted decibel scale (dBA). On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. For example, the L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level.

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 applicable standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact After Mitigation Incorporated.

Construction

Construction activities would occur Monday through Friday, and workers would typically be onsite for eight hours per day, from approximately 7:00 a.m. to late afternoon. No work outside of these hours, or work on weekends or national holidays, is anticipated. Construction activity would therefore comply with the allowable hours of construction in the Los Angeles Municipal Code (LAMC),

[26] State of California The Resources Agency Department of Conservation, Generalized Aggregate Resource Classification Map, San Fernando Valley and Adjacent Production-Consumption Regions, Special Report I43 Plate 2.1. May 25, 1979, accessed April 26, 2021.

[27] City of Los Angeles, Department of City Planning. *City of Los Angeles General Plan – Conservation Element*, available at: https://planning.lacity.org/odocument/28af7e21-ffdd-4f26-84e6-dfa967b2a1ee/Conservation_Element.pdf, accessed April 26, 2021.

including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday, and no construction activity on Sundays or federal holidays. The LAMC limits construction equipment noise levels to 75 dBA L_{eq} unless technically infeasible.

Noise impacts from construction of the proposed project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in Table 8. Noise levels from individual pieces of equipment typically are between 63.2 and 82.6 dBA L_{eq} at 50 feet from the source.

Table 8: Noise Level Ranges of Typical Construction Equipment

Construction Equipment	Noise Level At 50 Feet (dBa)
Auger Drill Rig	77.4
Concrete Mixer Truck	74.8
Concrete Saw	82.6
Crane	72.6
Excavator	76.7
Forklift	63.2
Front End Loader	75.1
Generator	77.6
Haul Truck	72.5
Hydraulic Pump in Pipe Jacking Plant	66.3
Microtunnel Boring Machine	0.0
Paver	74.2
Roller Compactor	73.0
Slurry Separator Plant	78.0
Vacuum Excavator (Vac-truck)	81.3
Vacuum Street Sweeper	71.6
Ventilation Fan	78.9
Vibratory or Press in Driver	78.9
Welder / Torch	70.0

Source: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, 29 April 2016; Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008; *Noise Levels of Lift Trucks*, 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm; Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, 21 June 2010.

To more accurately characterize noise during various phases of construction, the noise levels shown in Table 9 reflect the combined noise levels that would be expected taking into account the likelihood that multiple pieces of construction equipment would be operating simultaneously. Some pieces of equipment would be used only for certain tasks (e.g., concrete saw to cut pavement, or an excavator to excavate trenches and shafts), and they would not operate continuously during the day and generally would not operate simultaneously. Therefore, the combined noise levels take into account only construction equipment that would likely be operated simultaneously.

The RTLR, 16-inch distribution mainline, 12-inch distribution line along Reseda Boulevard, and the 60-inch trunk line along Louise Avenue would be installed using an open-trench method of construction. During open-trench construction, a concrete saw would generate the loudest noise levels at approximately 82.6 dBA L_{eq}. However, the concrete saw would only be used for very brief periods of time and during the early stages of open-trench construction. Therefore, the reference noise level for open-trench construction would be more typically represented by the operations of an excavator and front loader simultaneously, which would result in a combined noise level of approximately 79.9 dBA L_{eq}.

Table 9: Phased Construction Noise Levels

Construction Phases and Equipment	Noise Level at 50 feet (dBA, L_{eq})
Open-Trench Site Preparation	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
Open-Trench Excavation and Shoring	
Crane/a/	72.6
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
Open-Trench Pipe Installation	
Crane/a/	72.6
Generator/a/	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
Open-Trench Roadway Restoration	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Open-Trench Roadway Restoration Combined	**76.7**
Trunk Line Microtunneling Site Preparation	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
Trunk Line Microtunneling Shaft Excavation	
Crane/a/	72.6
Vibratory or Press in Driver/a/	78.9
Excavator	76.7
Front End Loader	75.1
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
Trunk Line Microtunneling	

Table 9: Phased Construction Noise Levels

Generator/a/	77.6
Hydraulic Pump in Pipe Jacking Plant/a/	66.3
Slurry Separator Plant/a/	78.0
Ventilation Fan/a/	78.9
Crane	72.6
Microtunnel Boring Machine	0.0
Trunk Line Microtunneling Combined	**83.1**
Trunk Line Microtunneling Shaft Backfilling	
Concrete Mixer Truck/a/	74.8
Crane/a/	72.6
Trunk Line Microtunneling Backfilling Combined	**76.8**
Trunk Line Microtunneling Roadway Restoration	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Trunk Line Microtunneling Roadway Restoration Combined	**76.7**
Distribution Mainline Open-Trench Site Preparation	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Distribution Mainline Site Preparation Combined	**79.0**
Distribution Mainline Open-Trench Site Excavation and Shoring	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Distribution Mainline Open-Trench Site Excavation and Shoring Combined	**79.0**
Distribution Mainline Open-Trench Installation	
Crane/a/	72.6
Generator/a/	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Welder / Torch	70.0
Pressure Regulation Stations Construction Combined	**81.9**

Note: /a/ Construction equipment that would be used simultaneously during construction phase and that would create the loudest noise level associated with the phase.
Source: AECOM, Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor, 29 April 2016. Federal Highway Administration, Roadway Construction Noise Model, Version 1.1, 2008; Noise Levels of Lift Trucks, 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm.; Washington State Department of Transportation, Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum, 21 June 2010.

Table 10 presents the estimated maximum construction noise levels related to open-trench construction for the RTLR and 16-inch distribution mainline along Roscoe Boulevard, Table 11 presents the estimated construction noise levels for the 12-inch distribution mainline along Reseda Boulevard, and Table 12 presents construction noise levels for the 60-inch trunk line along Louise Avenue. As illustrated in these tables, construction activity noise levels associated with the proposed project would exceed 75 dBA at the nearest sensitive receptors. This threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Table 10: Open Trench Construction Noise Levels at Receptors – Roscoe Boulevard

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Northridge Hospital	60	72.4	78.3
Valley Hindu Temple	60	73.9	78.3
Paradise Lodge	70	71.2	77.0
Residences between Mason Avenue and Winnetka Ave.	75	71.0	76.4
Residences between Winnetka Ave. and Corbin Ave	75	71.2	76.4
Residences between Corbin Ave. and Tampa Ave.	75	71.3	76.4
Residences between Tampa Ave. and Reseda Blvd.	75	73.9	76.4
Residences between Reseda Blvd. and White Oak Ave.	75	72.4	76.4
Residences between White Oak Ave. and Celia Pl.	75	73.7	76.4
Miller Career and Transition Center	75	73.9	76.4
Lifehouse Church	90	72.4	74.8
Residences between White Oak Ave. and Louise Ave. Southern Side	100	73.7	73.9
Petite Schoolhouse	125	58.8	71.9
Valley International Preparatory High School	130	73.9	71.6
Spirt of Hope Church	150	73.7	70.4
Residences between Winnetka Ave. Elementary School	200	71.2	67.9
St. Mary and St. Anthanasius Coptic Orthodox Church	270	73.7	65.3
Second Building Row Receptors			
Residences between Mason Ave and Winnetka Ave.	200	56.0	63.4
Residences between Winnetka Ave. and Corbin Ave.	200	60.6	63.4
Residences between Corbin Ave. and Tampa Ave.	200	54.2	63.4
Residences between Tampa Ave. and Aliso Canyon Wash	200	57.9	63.4
Residences between Aliso Canyon Wash and Reseda Blvd.	200	54.1	63.4
Residences between Reseda Blvd. and Lindley Ave.	200	50.6	63.4

Table 10: Open Trench Construction Noise Levels at Receptors – Roscoe Boulevard

Residences between Lindley Ave. and White Oak Ave.	200	55.7	63.4
Residences between White Oak Ave. and Celia Pl.	200	55.6	63.4
Residences between White Oak Ave. and Louise Ave. Southern Side	225	55.6	62.3
Green Gables Pre-School and Elementary School	350	71.2	58.5
Cleveland High School	350	57.9	58.5
Magnolia Science Academy 7	400	72.4	57.3
St. Mary School	400	55.6	57.3
Winnetka Recreation Center	450	56.0	56.3
Faith Bible Church Northridge	520	55.6	55.1
Third Building Row Receptors			
Residences between Mason Ave. and Winnetka Ave.	400	56.0	55.8
Residences between Winnetka Ave. and Corbin Ave.	400	60.6	55.8
Residences between Corbin Ave. and Tampa Ave.	400	54.2	55.8
Residences between Tampa Ave. and Aliso Canyon Wash	400	57.9	55.8
Residences between Aliso Canyon Wash and Reseda Blvd.	400	54.1	55.8
Residences between Reseda Blvd. and Lindley Ave.	400	50.6	55.8
Residences between Lindley Ave. and White Oak Ave.	400	55.7	55.8
Residences between White Oak Ave. and Celia Pl.	400	55.6	55.8
Residences between White Oak Ave. and Celia Pl.	425	55.6	55.3

[a] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2021.

Table 11: Open Trench Construction Noise Levels at Receptors – Reseda Boulevard

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Residences east of Reseda Blvd. approximately 480 feet north of Roscoe Blvd.	150	72.4	70.4
Second Building Row Receptors			
Magnolia Science Academy 7	270	56.0	60.8
Residences to the east and west of Reseda Blvd.	350	56.0	58.5

[a] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
Source: TAHA, 2021.

Table 12: Open Trench Construction Noise Levels at Receptors – Louise Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Residences adjacent to the east and west of Louise Ave.	60	58.8	78.3
Cedars Assisted Living	70	73.7	77.0
Residences to the southeast and southwest	330	73.7	63.5
Residences to the south	370	58.8	62.5
Residences to the north	400	58.8	61.8
Second Building Row Receptors			
Residences	200	56.0	63.4
Faith Bible Church Northridge	500	58.8	55.4
Third Building Row Receptors			
Residences	300	56.0	58.3

a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Microtunneling would be utilized in certain segments along Roscoe Boulevard to avoid conflicts with existing substructures, which include major sewer, storm, and water lines. Microtunneling would require excavating shafts at either end of the tunneling span. Noise generation would be concentrated around the shafts which would be open air and would involve some pieces of equipment (e.g., crane, slurry separator plant) aboveground. The underground component of the microtunneling process would use a MTBM, which would not generate aboveground noise. Microtunneling noise would typically be represented by the simultaneous operation of a generator, hydraulic pump associated with the hydraulic pipe jacking plant, slurry separator plant, and a ventilation fan, which would generate a combined noise level of approximately 83.1 dBA L_{eq}. Table 13 through Table 17 present the estimated noise levels at the sensitive receptors nearest to each microtunneling shaft location. Noise levels would exceed 75 dBA at the nearest sensitive receptors. The threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Table 13: Microtunneling Construction Noise Levels at Receptors – Winnetka Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Paradise Lodge	50	71.2	83.1
Residences along Roscoe Blvd. to the west	60	71.2	81.5
Residences along Roscoe Blvd. to the east	150	71.2	73.5
Winnetka Avenue Elementary School	190	71.2	71.5
Residences to the west	250	71.2	69.1
Second Building Row Receptors			
Residences along Roscoe Blvd. to the east	270	71.2	64.0
Residences to the north and northeast	270	56.0	64.0
Greene Gables Pre-School and Elementary School	350	71.2	61.7
Residences to the south of Roscoe Blvd. on Cantara St., east of Winnetka Ave.	380	56.0	61.0
Residences to the south of Roscoe Blvd. on Cantara St., west of Winnetka Ave.	390	56.0	60.8
Winnetka Recreation Center	440	56.0	59.7

[a] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Table 14: Microtunneling Construction Noise Levels at Receptors – Tampa Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	71.3	83.1
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	71.3	76.2
Residences to the south of Roscoe Blvd.	160	71.3	73.0
Second Building Row Receptors			
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	160	71.3	68.5
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	170	54.2	67.9
Residences to the north of Roscoe Blvd.	200	54.2	66.5
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	230	54.2	65.3
Residences to the north of Roscoe Blvd. on Tampa Ave.	370	71.3	61.2
Third Building Row Receptors			
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	340	54.2	60.4
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	470	54.2	57.6

a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Table 15: Microtunneling Construction Noise Levels at Receptors – Aliso Canyon Wash Crossing

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Joaquin Miller High School Career and Transition Center	50	73.9	83.1
Residences along Roscoe Blvd.	50	73.9	83.1
Residences along Roscoe Blvd. to the east and west	120	73.9	75.5
Residences along Roscoe Blvd. to the east and west	200	73.9	71.0
Valley International Preparatory High School	300	73.9	67.5
Second Building Row Receptors			
Residences to the south of Roscoe Blvd. on Cantara St. and Wilbur Ave.	200	54.1	66.5
Residences to the north of Roscoe Blvd.	230	57.9	65.3
Residences to the south of Roscoe Blvd. on Cantara St. and Vanalden Ave.	240	57.9	64.9
Residences to the south of Roscoe Blvd. on Crebs Ave.	250	54.1	64.6
Cleveland High School	330	57.9	62.2
Third Building Row Receptors			
Residences to the north of Roscoe Blvd.	340	57.9	60.4
Residences to the south of Roscoe Blvd.	490	57.9	57.2

[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Table 16: Typical Construction Noise Levels at Receptors Microtunneling Construction – Reseda Avenue to Lindley Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Residences along Roscoe Blvd.	50	72.4	83.1
Lifehouse Church	50	72.4	83.1
Magnolia Science Academy 7	50	72.4	83.1
Dignity Health - Northridge Hospital Medical Center	50	72.4	83.1
Family Medicine Associates	50	72.4	83.1
Northridge Medical Center	50	72.4	83.1
Adamian Orthodontics	50	72.4	83.1
Facey Medical Group	100	72.4	77.1
Endeavor Surgical Center	280	72.4	68.1
Medical Park Plaza	320	72.4	67.0
Dignity Health Medical Group - Northridge Family Medicine	500	72.4	63.1
Residences along Roscoe Blvd.	50	72.4	83.1
Lifehouse Church	50	72.4	83.1
Magnolia Science Academy 7	50	72.4	83.1
Second Building Row Receptors			
Residences to the north and south of Roscoe Blvd.	160	50.6	68.5
Endeavor Surgical Center	420	72.4	60.1
Third Building Row Receptors			
Residences to the north and south of Roscoe Blvd.	370	50.6	59.7
Northridge Middle School	370	50.6	59.7

[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Table 17: Typical Construction Noise Levels at Receptors Microtunneling Construction – White Oak

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Northridge Kidney Center	50	73.7	83.1
Petite School House	50	73.7	83.1
Residences along Roscoe Blvd.	50	73.7	83.1
Residences along Roscoe Blvd.	100	73.7	77.1
Residences along Roscoe Blvd.	130	73.7	74.8
Northridge Kidney Center	50	73.7	83.1
Petite School House	50	73.7	83.1
Residences along Roscoe Blvd.	50	73.7	83.1
Second Building Row Receptors			
Residences to the south of Roscoe Blvd. on Jellico Ave.	170	55.6	68.0
Residences along Roscoe Blvd.	200	73.7	66.6
Residences to the north of Roscoe Blvd. on White Oak Ave.	200	58.8	66.6
Residences to the southeast and southwest on Burton St.	200	55.7	66.6
Residences to the south of Roscoe Blvd. on White Oak Ave.	300	58.8	63.0
Residences to the south of Roscoe Blvd. on Yarmouth Ave.	340	55.7	61.9
Residences to the north of Roscoe Blvd. on Community St.	350	58.8	61.7
Residences to the south of Roscoe Blvd. on Jellico Ave.	170	55.6	68.0
Residences along Roscoe Blvd.	200	73.7	66.6
Residences to the north of Roscoe Blvd. on White Oak Ave.	200	58.8	66.6
Third Building Row Receptors			
Residences to the south of Roscoe Blvd. on Jellico Ave.	350	55.6	60.2
Residences to the southeast and southwest	350	55.7	60.2

a. The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Noise generated by construction at the two pressure regulating stations at Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station) and Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station) would primarily result from activities related to excavation. Pressure regulating station construction would typically be represented by the simultaneous operation of a crane, excavator, front end loader, and generator which would generate a combined noise level of approximately 81.9 dBA L_{eq}. Tables 18 and 19 present the estimated noise levels at the sensitive receptors nearest to each pressure regulation station sites. Noise levels would exceed 75 dBA at the nearest sensitive receptors. The threshold would typically not be exceeded at distances of 150 feet or greater.

Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

Table 18: Pressure Regulating Station Construction Noise Levels at Receptors – Penfield Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Residences along Roscoe Blvd. to the east	30	71.2	86.3
Residences along Roscoe Blvd. to the south	110	71.2	75.1
Residences along Roscoe Blvd. to the north	200	71.2	69.9
Second Building Row Receptors			
Residences to the north of Roscoe Blvd.	350	60.6	60.5
Residences to the south of Roscoe Blvd.	430	60.6	58.7
Winnetka Avenue Elementary School	530	71.2	56.9

[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

Table 19: Pressure Regulating Station Construction Noise Levels at Receptors – Reseda Avenue

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Project Noise Level (dBA)
First Building Row Receptors			
Medical Park Plaza	130	72.4	73.6
Residences to the west	310	72.4	66.1
Facey Medical Group	330	72.4	65.5
Second Building Row Receptors			
Residences to the north of Roscoe Blvd.	300	54.1	61.8
Endeavor Surgical Center	330	72.4	61.0
Residences to the south of Roscoe Blvd.	370	54.1	60.0

[a.] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.

Source: TAHA, 2021.

In addition to on-site construction activities, noise would be generated off-site by construction-related trucks. Construction of the proposed project would require the hauling and export of debris and excavated material from the site, and delivery of construction materials such as pipe segments and backfill. A maximum of 25 daily truck trips would be required, which would be approximately three truck trips per hour over an 8-hour workday. A doubling of traffic volume is typically needed to audibly increase noise levels along a roadway segment. Table 20 shows traffic volumes recorded by LADOT for locations along Roscoe Boulevard. Daily traffic along Roscoe Boulevard is approximately 30,000 trips with over approximately 2,000 peak hour trips in the AM and PM peak hour. An additional three truck trips per hour would not double the volume on any roadway segment, and, therefore, off-site vehicle activity would not audibly change average daily noise levels. The proposed project would not result in a short-term and temporary noise impact from construction trucks.

Table 20: Traffic Volumes on Local Streets

Roadway	Daily Traffic	Peak Hour Traffic	
		AM	PM
Roscoe Blvd. at Winnetka Ave.	29,549	2,089	2,463
Roscoe Blvd. at Tampa Ave.	32,733	2,639	2,642
Roscoe Blvd. at Reseda Blvd.	32,042	2,026	2,673
Roscoe Blvd. at White Oak Ave.	36,152	2,751	2,857
Roscoe Blvd. at Winnetka Ave.	29,549	2,089	2,463

Source: LADOT, 24-hour Traffic Volume

Mitigation Measures

NOI-1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

NOI-2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

NOI-3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

NOI-4 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

NOI-5 The public shall be notified in advance of the location and dates of construction hours and activities.

NOI-6 Unless infeasible, barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around perimeter of the microtunneling shafts and the slurry separation plants. Feasibility includes, but is not limited to, ensuring that the enclosures do not create safety hazards associated with vehicle sight lines or pedestrian activities. Noise barriers shall be capable of reducing construction noise levels by at least 10 decibels.

NOI-7 Unless infeasible, barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around perimeter of the pressure regulating construction sites. Feasibility includes, but is not limited to, ensuring that the enclosures do not create safety hazards associated with vehicle sight lines or pedestrian activities. Noise barriers shall be capable of reducing construction noise levels by at least 10 decibels.

Significance After Mitigation

Mitigation Measure NOI-1 would reduce construction noise levels by approximately 5 dBA. Mitigation Measures NOI-2 through NO1-5 would also reduce and/or control construction noise levels; however, because the reduction in noise associated with these measures is difficult to quantify, they have not been accounted for in the determination of noise from construction activities. The noise barriers in Mitigation Measures NOI-6 and NOI-7, when utilized, would reduce noise by 10 dBA. Mitigation Measures NOI-1, NOI-6, and NOI-7 would reduce noise levels to less than 75 dBA at nearby sensitive receptors. Potential noise reductions from temporary noise barriers may change due to physical limitations, traffic safety concerns, or other issues related to feasibility that cannot be determined at this time. However, consistent with the LAMC, all feasible measures would be taken to control construction noise. Therefore, the proposed project would result in a less than significant impact with mitigation incorporated. Mitigated noise levels are shown in Table 21.

Table 21: Mitigated Typical Construction Noise Levels at Impacted Receptors

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA)[a]	Mitigation Measure[b]	Mitigated Project Noise Level (dBA)
Open Trench – Roscoe Boulevard				
Northridge Hospital	60	72.4	N1	73.3
Valley Hindu Temple	60	73.9	N1	72.0
Paradise Lodge	70	71.2	N1	71.4
Residences between Mason Avenue and Winnetka Ave	75	71.0	N1	71.4
Residences between Winnetka Ave. and Corbin Ave	75	71.2	N1	71.4
Residences between Corbin Ave. and Tampa Ave.	75	71.3	N1	71.4
Residences between Tampa Ave. and Reseda Blvd.	75	73.9	N1	71.4
Residences between Reseda Blvd. and White Oak Ave.	75	72.4	N1	71.4
Residences between White Oak Ave. and Celia Pl.	75	73.7	N1	73.3
Miller Career and Transition Center	75	73.9	N1	71.4
Lifehouse Church	90	72.4	N1	71.4
Residences between White Oak Ave. and Louise Ave. Southern Side	100	73.7	N1	71.4
Open Trench – Louise Avenue				
Residences adjacent to the east and west of Louise Ave.	60	58.8	N1	73.3
Cedars Assisted Living	70	73.7	N1	72.0
Microtunneling – Roscoe Boulevard and Winnetka Avenue				
Paradise Lodge	50	71.2	N1, N6	68.1
Residences along Roscoe Blvd. to the west	60	71.2	N1, N6	66.5
Microtunneling – Roscoe Boulevard and Tampa Avenue				
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	71.3	N1, N6	68.1

Table 21: Mitigated Typical Construction Noise Levels at Impacted Receptors

Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	71.3	N1, N6	61.3
Microtunneling – Aliso Canyon Wash Crossing				
Joaquin Miller High School Career and Transition Center	50	73.9	N1, N6	68.1
Residences along Roscoe Blvd.	50	73.9	N1, N6	68.1
Residences along Roscoe Blvd. to the east and west	120	73.9	N1, N6	60.5
Microtunneling – Reseda Avenue to Lindley Avenue				
Residences along Roscoe Blvd.	50	72.4	N1, N6	68.1
Lifehouse Church	50	72.4	N1, N6	68.1
Magnolia Science Academy 7	50	72.4	N1, N6	68.1
Dignity Health - Northridge Hospital Medical Center	50	72.4	N1, N6	68.1
Family Medicine Associates	50	72.4	N1, N6	68.1
Northridge Medical Center	50	72.4	N1, N6	68.1
Adamian Orthodontics	50	72.4	N1, N6	68.1
Residences along Roscoe Blvd.	90	72.4	N1, N6	63.0
Facey Medical Group	100	72.4	N1, N6	62.1
Dignity Health Medical Group - Northridge Family Medicine	500	72.4	N1, N6	48.1
Microtunneling – Roscoe Boulevard and White Oak Avenue				
Northridge Kidney Center	50	73.7	N1, N6	68.1
Petite School House	50	73.7	N1, N6	68.1
Residences along Roscoe Blvd.	50	73.7	N1, N6	68.1
Residences along Roscoe Blvd.	100	73.7	N1, N6	62.1
Microtunneling – Roscoe Boulevard and Penfield Avenue				
Residences along Roscoe Blvd. to the east	30	71.2	N1, N7	71.3
Residences along Roscoe Blvd. to the south	110	71.2	N1, N7	60.1

[a] The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
[b] Mitigation Measure NOI-1 Includes a 5 dB reduction for equipment mufflers, Mitigation Measures NOI-6 and NOI-7 includes a 10 dB reduction for a temporary noise barrier.
Source: TAHA, 2021.

Operations

The proposed project would not include a significant source of permanent noise. Pipelines and appurtenant facilities would be located entirely underground. Activities associated with long-term operations would be minimal, limited to scheduled maintenance or emergency repair. Project operations would not create perceptible noise, and noise-generating maintenance and repair activities would be reduced after project implementation. Therefore, the proposed project would result in a less than significant impact related to operational noise.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact After Mitigation Incorporated.

Construction

Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver buildings. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), most residential buildings are assumed to be constructed of non-engineered timber and masonry materials (i.e., non-reinforced). Larger structures, such as hospitals are assumed to be constructed of reinforced concrete, steel, or timber. According to the FTA guidance, buildings constructed of non-engineered timber and masonry can withstand vibration levels up to 0.2 inches per second without experiencing damage. Buildings constructed of reinforced concrete, steel, or timber can withstand vibration levels up to 0.5 inches per second without experiencing damage. Project construction equipment would be most similar to the equipment listed in Table 22.

Table 22: Typical Outdoor Construction Vibration Levels

Equipment	PPV at 25 feet (Inches/Second)	PPV at 50 feet (Inches/Second)
Caisson Drill	0.089	0.031
Excavator	0.040	0.014
Pile Driver (Vibratory)	0.170	0.060
Small Bulldozer	0.003	0.001

Source: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018; New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012.

Construction equipment would largely be stationary on the project site and would not regularly traverse the site, resulting in the generation of vibration at off-site uses. Structures adjacent to the open-trench or microtunneling sites would typically be at least 50 feet from the construction activity. At a distance of 50 feet, vibration generating equipment would create vibration levels below the vibration damage threshold of 0.2 inches per second for non-engineered buildings and 0.5 for reinforced buildings.

Four historic buildings have been identified within 500 feet of construction activity. Historic buildings may be at risk of damage at vibration level as low as 0.12 inches per second. As shown in Table 23, the nearest historic structure is Cleveland High School, which is located approximately 50 feet from where construction activity would occur along Roscoe Boulevard. Vibration at this distance would be approximately 0.060 inches per second from a vibratory pile driver, which would be less than the vibration damage threshold of 0.12 inches per second. Lifehouse Church, "El Encanto" Historic Residential Structure, Los Angeles Fire Department Station 104, would be more than 50 feet away, and would not receive vibration levels that would exceed the vibration damage threshold of 0.12 inches per second.

Table 23: Historic Use Vibrations Analysis

Historic Uses	Address	Distance from Construction Activity (feet)	PPV at Historic Use (Inches/Second)
Cleveland High School	8140 Vanalden Ave.	50	0.061
Lifehouse Church	18355 Roscoe Blvd.	95	0.012
"El Encanto" Historic Residential Structure	17360 Chase St.	410	Less than 0.01
Los Angeles Fire Department Station 104	8349 Winnetka Ave.	475	Less than 0.01
Northridge Middle School	17690 Chase St.	630	Less than 0.01

Source: New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012. Los Angeles Department of City Planning Office of Historic Resources, *HistoricPlacesLA*, accessed June 24, 2021.

In addition to on-site construction activities, construction trucks on the roadway network have the potential to generate vibration. However, rubber-tired vehicles, including trucks, rarely generate perceptible vibration. It is not anticipated that project-related trucks would generate perceptible vibration adjacent to the roadway network. Therefore, no impact related to structural damage would occur from construction vibration.

Vibration annoyance is another concern related to construction activity. Perceptible vibration is a common occurrence within the urban environment and is not typically a concern for human health. However, special uses such as medical facilities, research facilities, and recording studios would be potentially impacted by construction vibration annoyance due to the presences of sensitive equipment. Vibration levels that would be generated by construction equipment were calculated for special uses identified within the vicinity of the proposed project, which include Dignity Health Northridge Hospital Medical Center and Lima Recording Studios. According to the FTA Transit Noise and Vibration Impact Guidance, engineered buildings constructed on spread footings, such as the Dignity Health Northridge Hospital Medical Center, reduce ground-borne vibration by approximately 13 dB due to the building foundations.[28] Nonetheless, as shown in Table 24, vibration levels would exceed the annoyance criteria at Dignity Health Northridge Hospital Medical Center. This vibration level would result from the use of vibratory drivers to install sheet piles. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site vibration annoyance.

Table 24: Construction Vibration Levels at Sensitive Receptors (Annoyance)

Sensitive Receptor	Distance (feet)[a]	Vibration Level (VdB)	Threshold (VdB)	Exceed Threshold?
Dignity Health - Northridge Hospital Medical Center	50	71	65	Yes
Lima Recording Studios	420	43	65	No

a. Measured from the project site to the nearest structure.
Source: TAHA, 2021.

28 FTA, *Transit Noise and Vibration Impact Assessment*, *Table 6-12 Path Adjustment Factors for Generalized Predictions of Groundborne Vibration and Noise*, September 2018.

Operations

The primary sources of operational vibration would include vehicles traveling to the project site for periodic maintenance. Vehicular movements would generate similar vibration levels as existing traffic conditions. The proposed project would not introduce any stationary sources of vibration. Therefore, operational activity associated with the proposed project would result in no impact related to vibration.

Mitigation Measures

NOI-8 Press in pile drivers shall be used in place of vibratory pile drivers to install sheet piles for the microtunneling shaft between Reseda Boulevard and Etiwanda Avenue, adjacent to Dignity Health Northridge Medical Center.

Significance After Mitigation

Mitigation Measure NOI-8 would eliminate off-site vibration annoyance impacts at Dignity Health Northridge Hospital Medical Center by requiring the use of press in pile drivers, in place of vibratory pile drivers. Press in pile drivers generate vibration levels of approximately 0.03 inches per second (80 vibration velocity decibels [VdB]) at 25 feet. This would result in a vibration level of approximately 58 VdB at the Dignity Health Northridge Hospital Medical Center when accounting for the building foundation coupling loss of 13 dB. This would be below the 65 VdB vibration annoyance threshold; therefore, the proposed project would result in a less than significant impact with mitigation incorporated.

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

No Impact. The proposed project is located within two miles of Van Nuys Airport to the east. According to the Los Angeles County Airport Land Use Commission, the proposed project area is not within the Airport Influence Area.[29] Therefore, no impact related to airport or airstrip noise would occur.

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)?

No Impact. Construction of the proposed project is scheduled to begin in mid-2024 and is anticipated to last approximately 7 years. Given the temporary nature of construction industry jobs, the relatively large regional construction industry, and the relatively nominal total number of construction workers needed during any construction phase, the labor force from within the region would be sufficient to complete project construction without an influx of new workers and their families. Accordingly, construction employment generated by the proposed project would not

[29] Los Angeles County Airport Land Use Commission, May 2003.

impact population in the heavily-populated Los Angeles region. Therefore, construction of the proposed project would not directly induce population growth, and there would be no impact.

The proposed project does not include any residential or commercial land uses and, therefore, would not result in a direct population increase. The project would replace existing aging water conveyance infrastructure and would serve existing customers. Since the proposed project would provide no additional water supply to the City, it would not indirectly induce population growth. Therefore, no impact to population growth during project operation would occur.

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

No Impact. Construction activity would primarily occur within existing road rights-of-way. The proposed project would not require the removal of existing housing. In addition, no persons would be displaced as a result of implementation of the proposed project. Therefore, the proposed project would not affect the number or availability of existing housing in the area and would not necessitate the construction of replacement housing elsewhere. No impact would occur.

XV. PUBLIC SERVICES

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

i) Fire protection?

No Impact. Fire protection services in the City are provided by the City of Los Angeles Fire Department (LAFD). There are several LAFD fire stations serving the project area. The proposed project does not include new housing or non-residential development; thus, the demand for fire protection services would not increase. The proposed project would replace existing aging water conveyance infrastructure and would serve existing customers. Since the proposed project would provide no additional water supply to the City, it would not generate population growth that would lead to the need for additional fire protection services. Therefore, the proposed project would not require the construction of additional fire protection facilities or expansion of existing facilities, and no impact would occur.

ii) Police protection?

No Impact. The City of Los Angeles Police Department (LAPD) is the local law enforcement agency responsible for providing police protection services in the City. Several LAPD Community Police Stations serve the project area. As previously stated, the proposed project does not include new housing or non-residential development; thus, the demand for police protection services would not increase. The proposed project would replace existing aging water conveyance infrastructure and would serve existing customers, and it would not generate population growth that would lead to the need for additional police protection services. Therefore, the proposed project would not require the construction of additional police protection facilities or expansion of existing facilities, and no impact would occur.

iii) Schools?

No Impact. The demand for new or expanded school facilities is generally associated with an increase in housing or population. As the proposed project does not include development of any residential uses, no direct increase in residential population would occur. Construction workers are anticipated to be drawn from the existing workforce throughout the region. As such, construction of the proposed project would not generate new permanent residents that would increase the demand for schools. No additional workers would be employed for project operations as the trunk line is a passive use. Additionally, as the proposed project would provide no additional water supply to the City, it would not indirectly induce population growth. Therefore, no increase in demand for local schools would result, and no impact would occur.

iv) Parks?

No Impact. As previously stated, the proposed project does not include development of any residential uses. Construction and operation of the proposed project would not generate new permanent residents that would increase the demand for parks and recreational facilities. Therefore, no impact would occur.

v) Other public facilities?

No Impact. Demand for other public facilities, such as libraries, is generally associated with increased housing or population. As previously discussed, the proposed project does not include a component that would generate an increase in housing or population. The proposed project would not result in indirect population growth that could increase demand for other public facilities. Therefore, the proposed project would result in substantial adverse physical impacts associated with the provision of new or expanded public facilities. No impact would occur.

XVI. RECREATION

Would the project:

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

No Impact. The proposed project involves the replacement of existing water conveyance with no increase in water supply. Construction workers are anticipated to be largely drawn from the existing workforce in the region, and no additional workers would be required for operation of the proposed project. Neither construction nor operation of the proposed project would generate new permanent residents that would increase the use of existing parks and recreational facilities. Therefore, substantial physical deterioration of these facilities would not occur or be accelerated with implementation of the proposed project. No impact would occur.

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

No Impact. The proposed project does not include development of any recreational facilities. Further, since the proposed project would provide no additional water supply to the City, it would not induce growth that could require the construction or expansion of recreational facilities. Therefore, no impact would occur.

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?

Less Than Significant Impact. Two bus routes, Lines 152 and 237, operated by the Los Angeles County Metropolitan Transportation Authority are located along Roscoe Boulevard within the project alignment. Stops for Line 152 are located on the north and south sides of Roscoe Boulevard at all major intersections throughout the project alignment. Stops for Line 237 are located at White Oak, Zelzah, and Lindley Avenues on the north and side sides of Roscoe Boulevard.[30] Line 240 operates on Reseda Boulevard with stops at Roscoe Boulevard and Chase Street on the east and west side of the street. There are no demarcated bike lanes on Roscoe Boulevard. A Class II demarcated bike lane is located on the east and west sides of Reseda Avenue between Roscoe and Bryant Street. Sidewalks are located on both sides of Roscoe Boulevard and Reseda Avenue throughout the project alignment.

As discussed above, construction activities associated with the proposed pipeline installation would take place entirely within the existing road rights-of-way along portions of Roscoe Boulevard and Reseda Boulevard. Project construction activity within the public road right-of-way would require lane closures, which would disrupt traffic in the area of the construction zones, including automobile, bus, and potentially bicycle traffic.

A traffic control plan, as required by LADOT, would include measures such as signage, restriping of lanes, flag persons, detour plans, and temporary relocation of bus stops if necessary to reduce disruptions. These disruptions would be temporary and relatively short-term, and would not represent a conflict with a program plan, ordinance or policy addressing the circulation system. Therefore, the impact during construction would be less than significant.

Following the completion of construction activities, all road rights-of-way would be returned to pre-construction conditions and operation of the proposed project would require only periodic maintenance activities, which would not represent a conflict with a program plan, ordinance or policy addressing the circulation system.

30 Los Angeles County Metropolitan Transportation Authority, Schedules, Routes and Stops; available at METRO Bus routes, Bus times and schedule in Los Angeles (moovitapp.com), accessed September 24, 2021.

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

No Impact. CEQA Guidelines section 15064.3 establishes vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. The LADOT Transportation Assessment Guidelines establish instructions and standards for preparation of transportation assessment in the City of Los Angeles.[31] The VMT assessment is intended to focus on the long-term, permanent transportation impacts related to the generation of automobile trips and the opportunities for alternative modes of transportation (public transit, walking, bicycling) associated with a development project. Due to the temporary and relatively low-level nature of traffic generated by the project's construction, VMT assessments are not relevant for the project, especially since there would be no increase in post-construction operational trips. As such, neither construction nor operation of the proposed project would conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). No impact would occur.

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

Less Than Significant Impact. The proposed project would not include any new or altered roadways. However, during project construction, traffic lanes would temporarily be closed on portions of Roscoe Boulevard and Reseda Boulevard. Potential conflicts associated with these lane closures would be addressed in the traffic control plan required by LADOT, which would include measures such as signage, restriping of lanes, flag persons, and detour plans. With the implementation of the required traffic control plan, hazards associated with lane closures during project construction would be less than significant. During project operation, all road rights-of-way would be returned to pre-construction configuration, and no conflicts would occur.

d) Result in inadequate emergency access?

Less Than Significant Impact. The proposed project would require temporary lane closures during construction activities. As such, construction could potentially hinder emergency access along portions of the pipeline alignment under construction. However, as listed in the construction BMPs in Section 1.9 of Chapter 1 of this IS/MND, LADWP would coordinate with emergency responders, including the Los Angeles Fire Department and Los Angeles Police Department, regarding construction schedule and traffic control plans so as to coordinate emergency response routing during construction work. Coordination with emergency response agencies would ensure a less than significant impact to emergency access during construction activities.

[31] City of Los Angeles Department of Transportation, Transportation Assessment Guidelines, July 2020, available at: https://ladot.lacity.org/documents/transportation-assessment, accessed September 24, 2021.

During project operation, roadways would be returned to pre-construction configuration, and emergency access would not be restricted. No impact would occur during project operation.

XVIII. TRIBAL CULTURAL RESOURCES

The following analysis is based on information is provided in the Cultural Resources Technical Memorandum prepared for the proposed project, which is included in Appendix C to this IS/MND and Native American consultation by LADWP in accordance with Assembly Bill 52 (AB 52), which requires that a lead agency must consult with California Native American tribes who request formal consultation regarding potential impacts to tribal cultural resources.

Would the project:

a) Cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

No Impact. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. No known tribal cultural resources were identified within the project alignment based on the Sacred Lands File search conducted by the Native American Heritage Commission, archival research, the field survey of the alignment and surrounding area, and consultation with Native American tribal representatives pursuant to AB 52. Therefore, there are no cultural resources within the alignment listed or eligible for listing in the CRHR or a local register. The proposed project would not result in a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in a state or local register of historical resources. No impact would occur.

b) Cause a substantial adverse change in the significance of a tribal cultural resource that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of the Public Resources Code Section 5024.1?

Less Than Significant Impact After Mitigation Incorporated. As discussed in Section XVIII(a) above in Chapter 3 of this IS/MND, no tribal cultural resources, including sites, places, landscapes, or objects, were identified within the proposed project APE based on the Sacred Lands File search conducted by the Native American Heritage Commission, archival research, the field survey of the alignment and surrounding area, and consultation with Native American tribal representatives pursuant to AB 52. As of the publication date of this IS/MND, LADWP has consulted with three tribes that requested consultation on the proposed project, the Gabrielino Tongva Indians of California, the Gabrieleño Band of Mission Indians – Kizh Nation, and the Fernandeño Tataviam Band of Mission Indians. Because no specific tribal cultural resources have been identified within the project alignment, including during AB 52 consultation, and because of substantial previous subsurface disturbance within all areas proposed for project construction related to previous road and utility construction, the potential for the existence of tribal cultural resources is considered low. Nonetheless, during the construction of the proposed project, unknown subsurface archaeological resources, including tribal cultural resources, could potentially be encountered during ground-disturbing activities.

As discussed in Section V(b) of Chapter 3 of this IS/MND (Cultural Resources), in the event previously unknown archaeological resources are encountered during construction activities, the proposed project would be subject to California PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. These provisions include immediately halting construction work in the vicinity of the find (within a 50-foot buffer) and LADWP retaining a qualified archaeologist meeting Secretary of Interior standards to evaluate the significance of and determine appropriate treatment for the resource in accordance with the provisions of CEQA Guidelines Section 15064.5 and the National Historic Preservation Act. If the resource is determined to be potentially of Native American in origin, MM TCR-1 would be required to reduce impacts to a less than significant level. With compliance with PRC Section 21083.2(i), implementation of Mitigation Measure TCR-1, as well as the cultural resources awareness training BMP, as outlined in Section 1.9 of Chapter 1 of this IS/MND, impacts to tribal cultural resources would be less than significant.

Mitigation Measure

TCR-1 In the event that an archaeological resource inadvertently discovered during project construction is determined to be potentially of Native American origin based on the initial assessment of the find by a qualified archaeologist pursuant to California Public Resources Code (PRC) Section 21083.2(i), the Native American tribes that consulted on the proposed project pursuant to California Assembly Bill 52 shall be notified and be provided information about the find to allow for early input from the tribal representatives with regards to the potential significance and treatment of the resource.

If, as a result of the resource evaluation and tribal consultation process, the resource is considered to be a tribal cultural resource determined, in accordance with California PRC Section 21074, to be eligible for inclusion in the California Register of Historic Resources or a local register of historical resources or determined to be significant by LADWP (the CEQA lead agency), the qualified archaeologist shall monitor all remaining ground-disturbing activities in the area of the resource, and a tribal monitor from a consulting Native American tribe shall be invited to monitor the ground-disturbing activities. All monitoring performed shall be compensated. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources prepared by the qualified archaeologist. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

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

No Impact. The proposed project would involve the installation of a trunk line in an existing roadway to replace an existing aging trunk line. The construction and operation of the proposed project would not result in the need for additional water or wastewater treatment facilities. Construction of the proposed project is scheduled to begin in mid-2024 and is anticipated to last approximately 7 years. During construction, water would be required for activities such as dust control. However, these activities are limited and temporary and would not consume large amounts of water that would require construction of new water treatment facilities. Sanitary waste related to the temporary increase in on-site workforce during project construction would be handled through the use of portable chemical toilets, the waste from which would be removed by a private contractor and disposed at an approved off-site location that would comply with the wastewater treatment requirements of the RWQCB. All drainage flows would be routed through existing storm infrastructure serving the project site and surrounding areas. Following construction, storm water flows would be similar to existing conditions. Use of electric power during construction would be provided by generators.

The proposed project would not require new or expanded water, wastewater treatment, electric power, natural gas, or telecommunications facilities. No impact would occur.

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

No Impact. Construction of the proposed project would require a limited quantity of water for dust control, excavation, and other construction-related activities. Existing water resources provided by LADWP would be sufficient to meet those needs. Once completed, the proposed RTLR would not require new water supplies or increase the demand for water use. Therefore, no impacts would occur.

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?

No Impact. No wastewater would be generated during either construction or operation of the proposed project that would require an increase in demand for wastewater treatment capacity. Therefore, no impacts to wastewater treatment capacity would occur.

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

Less Than Significant Impact. As discussed above, the proposed project would require excavation in the roadway for the installation of the RTLR, generating construction waste, including demolished asphalt and soil. The total volume of excavated material over the 7-year construction period is estimated to be approximately 125,000 loose cubic yards (LCY), which is the volume based on expansion due to an increase in void spaces after the material is excavated from it fully compacted state in the ground. This would represent an average of approximately 18,000 LCY per year during the construction period and approximately 72 LCY per day assuming 250 workdays per year. For impact analysis purposes, it has been assumed that the material would be disposed of in an area landfill approved to accept spoils. Several landfills throughout the County of Los Angeles could serve the project, as listed in Table 25. The total permitted throughput for all these landfills is 37,075 cubic yards per day, and approximately 180 million cubic yards of total capacity remain. The estimate of excavated material to be generated and disposed during project construction represents approximately 1 percent of the total remaining capacity and daily throughput limit of the landfill with the least capacity (Calabasas). In addition, the project would incorporate source reduction techniques and recycling measures, as well as maintain a recycling program to divert waste in accordance with California Assembly Bill 939 and the Citywide Construction and Demolition Debris Recycling Ordinance. These measures would minimize the amount of construction debris generated by the proposed project that would need to be disposed of in an area landfill. Once project construction is complete, the operation of the pipeline would not generate solid waste. Therefore, the project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local landfills, or otherwise impact the attainment of solid waste reduction goals; impacts would be less than significant.

Table 25: Existing Landfills

Landfill	Location	Estimated Closing Year	Maximum Daily Capacity (cubic yards per day)	Current Remaining Capacity (million cubic yards)
Antelope Valley	Palmdale	2039	4,800	16.48
Calabasas Landfill	Unincorporated Area	2029	7,795	12.48
Chiquita Canyon Landfill	Unincorporated Area	2047	6,730	60.12
Lancaster Landfill	Unincorporated Area	2041	4,000	13.70
Sunshine Canyon Landfill	Los Angeles/ Unincorporated Area	2037	13,750	77.31
		Total	**37,075**	**180.9**

Source: County of Los Angeles. 2017. Countywide Integrated Waste Management Plan, 2017 Annual Report, available at: https://dpw.lacounty.gov/epd/swims/ShowDoc.aspx?id=11230&hp=yes &type= PDF, accessed November 24, 2020.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The proposed project would comply with federal, state, and local statutes and regulations regarding solid waste. As discussed in Section XVIII(f) above in Chapter 3 of this IS/MND, construction debris would be recycled or disposed of according to local and regional standards. No impact would occur.

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?

No Impact. The project site is located within an urban area of the City of Los Angeles and is not located within or near a Very High Fire Hazard Severity Zone (VHFHSZ) within a Local Responsibility Area or State Responsibility Area.[32] Therefore, no impact related to an emergency response plan or evacuation plan within a VHFHSZ would occur.

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

No Impact. The project site is located within an urban area of the City of Los Angeles and is not located within or near a VHFHSZ within a Local Responsibility Area or State Responsibility Area. Therefore, no impact related to increased pollutant concentrations from wildfire would occur.

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

No Impact. The project site is located within an urban area of the City of Los Angeles and is not located within or near a VHFHSZ within a Local Responsibility Area or State Responsibility Area. Therefore, no impact related to the installation or maintenance of infrastructure within a VHFHSZ would occur.

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?

No Impact. The project site is located within an urban area of the City of Los Angeles. The project site is not located within or near a VHFHSZ within a Local Responsibility Area or State Responsibility Area. Therefore, no impact related to flooding or landslides resulting from wildfire would occur.

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

[32] State of California and the Department of Forestry and Fire Protection (CAL FIRE), Very High Fire Hazard Severity Zone Map, available at: https://osfm.fire.ca.gov/media/5830/los_angeles.pdf, accessed on: September 24, 2021.

eliminate important examples of the major periods of California history or prehistory?

Less Than Significant Impact After Mitigation Incorporated. The project is located in the heavily-urbanized communities of Northridge, Chatsworth, Reseda and Winnetka within the San Fernando Valley in the City of Los Angeles. No natural vegetation communities exist within the project area. Ornamental vegetation, including primarily street trees, shrubs, and lawns lie adjacent to the proposed RTLR Project alignment. The CNDDB search conducted for the proposed project indicates very few records of special-status species that coincide with the proposed alignment or immediately adjacent, and those that have been recorded are 50 plus years old and are likely extirpated due to the developed nature of the project area and lack of potentially suitable habitat to support any special-status species. One special-status plant species, the southern California black walnut (*Juglans californica*), was noted within the BSA during the field survey, as introduced specimens on private residential properties adjacent to the project alignment but outside the public right-of-way or on side streets off the project alignment, where they would not be impacted during project implementation. As a result, the proposed project would not result in a substantial adverse impact to listed, candidate, or otherwise sensitive special-status plant or wildlife species.

While no trees or other vegetation would be removed during project construction, noise and dust generated during construction could indirectly impact nesting birds resulting in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indirect impacts due to construction activities occurring during the nesting bird season, generally considered to extend from February 15 through September 15, would be avoided by complying with existing regulations (i.e. MBTA, CFGC) that protect nesting birds. Since entirely avoiding the nesting bird season is not possible due to the nature of the project, compliance would be achieved through the implementation of pre-construction surveys be conducted to ensure compliance with the MBTA and CFCG. With implementation of the BMP related to the MBTA (as discussed in Section 1.9 of Chapter 1 of this IS/MND), indirect impacts of construction on nesting birds would be to less than significant.

As discussed in Section V(a) above in Chapter 3 of this IS/MND, the SCCIC records search identified four previously recorded cultural resources mapped within 0.5 miles of the project APE. The resources included one prehistoric isolate, one commercial property, one residential property, and one church. None of the resources are located within the project APE. Two properties are listed in the BERD for Roscoe Boulevard and Reseda Boulevard within 0.5 miles of the project APE. Both properties were determined ineligible for the National Register and not evaluated for the California Register or for Local Listing. In addition, a search of resources in the Los Angeles Historic Resources Inventory identified three historic resources. These include a church, a car dealership (which since identified in the inventory has been demolished), and a liquor store sign. These resources are located outside of the project APE and would not be impacted as a result of the proposed project.

Based on the results of AB 52 consultation which LADWP has conducted with interested local tribal representatives, the broader project region is sensitive for tribal cultural resources, and such resources, although not known to exist in the project APE, could lie beneath the surface and may be inadvertently discovered during ground disturbing construction activities. Because the potential to encounter tribal cultural resources exists for this project, Mitigation Measure TCR-1 related to the inadvertent discovery, evaluation, and treatment of tribal cultural resources would be implemented. This measure includes, as necessary, the opportunity for a tribal monitor from a consulting Native American tribe to observe the ground-disturbing activities. With compliance with PRC Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources, implementation of Mitigation Measure TCR-1, as well as the cultural resources awareness training BMP, as outlined in Section 1.9 of Chapter 1 of this IS/MND, impacts to tribal cultural resources would be less than significant.

b) Does the project have environmental effects that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant 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. A significant environmental impact could result from the combined effects of two or more projects that are closely related geographically (i.e., within the same vicinity or greater region, depending on the nature and scope of the project and environmental factor under consideration) and in time (i.e., recently completed projects, projects currently under construction, and/or projects anticipated to be implemented in the near-term future). In general, the effects of a proposed project when combined with the effects of past projects (other than projects recently completed) are accounted for in the baseline conditions for the analysis of the proposed project's environmental impacts.

The analysis of the combined impacts of more than one project under CEQA allows decision-makers to consider the potential consequences of a project(s) in a broader environmental context rather than in isolation. This is necessary because a significant combined impact could result even when the individual impacts of related projects are less than significant. The combined effects of several related projects with individually less than significant impacts may also be determined to be less than significant on a cumulative basis. In addition, even if the combined effects of several related projects are determined to be significant, an individual project's incremental contribution to those significant combined effects may be determined to be less than cumulatively considerable and, therefore, less than significant.

When a project would create no impact related to a particular environmental factor, there would be no potential for the project to contribute to a significant effect created by the combined impacts of closely related projects. Based on the analysis in this IS/MND, the proposed project would create no impacts related to aesthetics, agriculture and forestry resources, land use and planning, mineral resources, population and housing, public services, recreation, or wildfire.

Impacts for all other environmental factors considered in this IS/MND were determined to be less than significant without the need for mitigation measures, except for impacts related to noise created by construction activity and tribal cultural resources not currently listed or identified as eligible for listing in the CRHR, which were determined to be less than significant with the incorporation of mitigation measures.

Air pollutant and GHG emissions, as assessed under CEQA, are inherently recognized as cumulative impacts. Project-level thresholds of significance for these emissions are used in the determination of whether a project's individual emissions would make a cumulatively considerable contribution to a significant impact. Based on the analysis contained in this IS/MND, both air quality and GHG emissions would remain generally substantially below the defined thresholds of significance. Therefore, the proposed project would not make a cumulatively considerable contribution to a wider adverse air quality or GHG impact.

The use of energy is likewise considered an impact with potentially broader effects based on the consumption of limited energy resources. However, it was determined in this IS/MND that project energy consumption would be relatively minor, would not be wasteful, and would be temporary in nature, occurring only during project construction. Therefore, the proposed project would not make a cumulatively considerable contribution to a wider adverse impact related to energy consumption and conservation.

Potential impacts to various resources, including biological resources (nesting birds) and the inadvertent discovery of unknown buried archaeological, paleontological, or tribal cultural resources as well as human remains were determined in this IS/MND to be less than significant through compliance with existing policies or regulations, with the implementation of applicable BMPs established as part of the proposed project, or with the implementation of mitigation measures introduced based on the results of the environmental analysis contained in the IS/MND. However, such impacts, should they occur, are site-specific in nature, limited to the project construction footprint, and would not, therefore, make a cumulatively considerable contribution to similar potentially adverse impacts resulting from other closely related projects in the vicinity.

Geology and hydrology impacts related to increased potential for erosion, runoff, siltation, flooding, and pollution discharges would also generally be site-specific in nature, but such impacts could also extend off site and result in a larger impact when combined with similar impacts from closely related projects in the area. However, given the nature of the proposed project and the existing setting and with the implementation of applicable BMPs established as part of the proposed project, off site impacts would be largely eliminated and would, therefore, not make a cumulatively considerable contribution to a more widespread impact potentially created by the combined effects of closely related projects.

Geology impacts related to seismic hazards and hazards created by various soil conditions pertain to the potential impacts from the environment upon the proposed project rather than impacts to the environment caused by the project. In this regard the project would not make a cumulatively considerable contribution to similar impacts experienced by closely related projects in the area.

Impacts related to noise and hazardous materials during construction have the potential to affect a limited area beyond the boundary of the project. However, the assessment of such impacts in this IS/MND and the conclusion of a less than significant impact accounted for the combined effect of the project and the surrounding existing setting. Furthermore, no major projects that would contribute to a significant combined impact related to these environmental factors have been identified in the vicinity of the proposed project.[33]

The project would create individually less than significant impacts to transportation systems based on the requirement to close traffic lanes during construction. This impact would be temporary and limited in physical extent at a given time, and therefore, would make a less than cumulatively considerable incremental contribution to any combined effect created by other projects. Furthermore, as discussed above, no major projects that would contribute to a significant combined impact related to transportation have been identified in the vicinity of the proposed project.

Impacts to utilities and service systems could contribute to a significant impact from the combined effects of more than one project on the limited capacity of services such as wastewater treatment, water supply, and solid waste disposal. However, as discussed in this IS/MND, the project would create no impacts related wastewater, storm water, electrical power, natural gas, or telecommunications facilities or supplies, and, therefore, could not make a cumulatively considerable contribution to a wider impact. As discussed, the project would generate solid waste in the form of excavated material. However, this would be temporary, occurring during construction only, and would represent about 1 percent of both the allowable daily throughput and total remaining capacity of the regional landfill with the least amount of available capacity, which would represent a less than cumulatively considerable incremental contribution by the project to any combined effect created by other projects.

Based on the above, the project would not have environmental effects that are individually limited, but cumulatively considerable, and the impact is less than significant.

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

Less Than Significant Impact After Mitigation Incorporated. As discussed throughout Chapter 3 of this IS/MND, the impacts related to the proposed project would be temporary in nature, driven by construction activities. As such, the proposed project would not result in potentially significant long-term impacts to the environment that would result in substantial adverse effects on human beings, either directly or indirectly. Numerous factors discussed above in Chapter 3 pertain to the quality of the human environment. Based on the analysis contained above, the environmental impacts created by the proposed project in relation to most of these factors would be less than significant. As discussed in Section XIII of Chapter 3 of this IS/MND, the project could generate a substantial temporary increase in ambient noise levels and groundborne vibration from the construction activity. Therefore, Mitigation Measures NOI-1 through NOI-8 would be required. With the incorporation of these mitigation measures, substantial adverse effects on human beings would not occur. Therefore, impacts would be less than significant.

[33] Los Angeles Department of City Planning. Major Projects. Website: https://ladcp.maps.arcgis.com/apps/MapJournal/index.html?appid=b06f97ccf94741fdaad27443013eead1, accessed December 3, 2021.

CHAPTER 4
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TECHNICAL APPENDICES

TECHNICAL APPENDICES
TABLE OF CONTENTS

APPENDIX A

Air Quality Assessment

taha
environmental planners

Technical Memorandum

TO: Shannon Ledet
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: September 30, 2021

RE: Roscoe Trunk Line Replacement Project – Air Quality Impacts Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed an Air Quality Assessment for the Roscoe Trunk Line Replacement Project (RTLR project or proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Air Quality Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to replace approximately 21,000 linear feet of the existing Roscoe Trunk Line. The RTLR would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from Mason Avenue on the west to Louise Avenue on the east, in the west San Fernando Valley area of Los Angeles. The RTRL would replace an existing high-density polyethylene trunk line that has experienced 15 leaks between 2004 and 2019. The condition of the existing line compromises the reliability of water supply in the area and also substantially increases long-term maintenance and repair activities. The proposed project would also include approximately 18,000 linear feet of a new 16-inch diameter distribution mainline, approximately 2,300 linear feet of a 12-inch diameter replacement distribution mainline, and two new pressure regulating stations. All these proposed facilities would be located underground within the road right-of-way.

The RTLR project would be located in the western San Fernando Valley of the City of Los Angeles. Roscoe Boulevard, an east-west thoroughfare, forms the boundary between the communities of Northridge and Chatsworth to the north and Reseda and Winnetka to the south. Uses along Roscoe consist of a mix of single-family and multi-family residential, retail and service commercial, and institutional uses, including schools and the Northridge Hospital Medical Center. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the RTLR project area. While the majority of the RTLR project would be located within Roscoe Boulevard, one proposed underground regulation station would be located within Penfield Avenue just north of Roscoe Boulevard, and the proposed 12-inch diameter replacement distribution mainline would be installed in Reseda Boulevard between Roscoe Boulevard and Bryant Street.

Proposed RTLR Components and Location

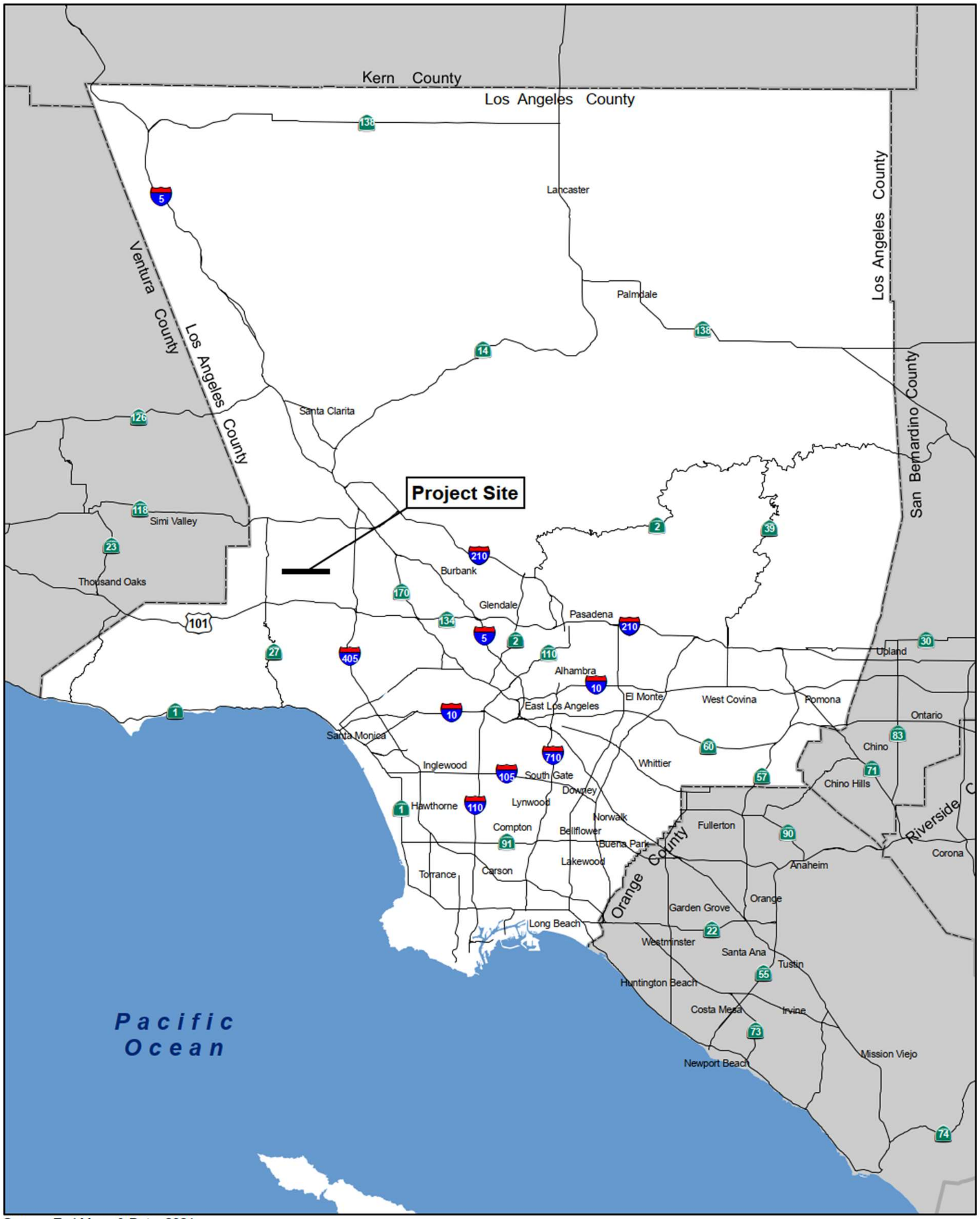
The primary component of the proposed project is a new underground 48-inch diameter welded steel or ductile iron trunk line, which would the replace the existing high-density polyethylene Roscoe Trunk Line. As previously discussed, the replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line and the 1,134-foot service zone at Louise Avenue. On the west, the RTLR would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement and the 1,123-foot service zone near Mason Avenue.

Because the RTLR would interconnect directly to the 1,134-foot and 1,127-foot zones to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline, which would provide the direct service to the 947-foot zone currently provided by the existing Roscoe Trunk Line. The proposed 16-inch mainline would closely parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west.

To reduce the operating pressure between the higher service zones with which the RTLR would interconnect (i.e., the 1,134-foot and 1,127-foot zones) and the 947-foot zone, the proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project. As is the case with the existing Roscoe & Louise Regulating Station, the two proposed regulating stations would be located entirely underground.

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street. In addition, 250 linear feet of 60-inch diameter trunk line would be installed in Louise Avenue north of Roscoe Boulevard for connection to the future proposed Havenhurst Trunk Line replacement.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include pressure relief stations, valves, flow meters, and maintenance holes. All these facilities would be located underground within the road right-of-way.



Source: Esri Maps & Data, 2021

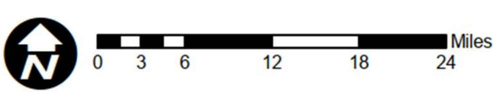
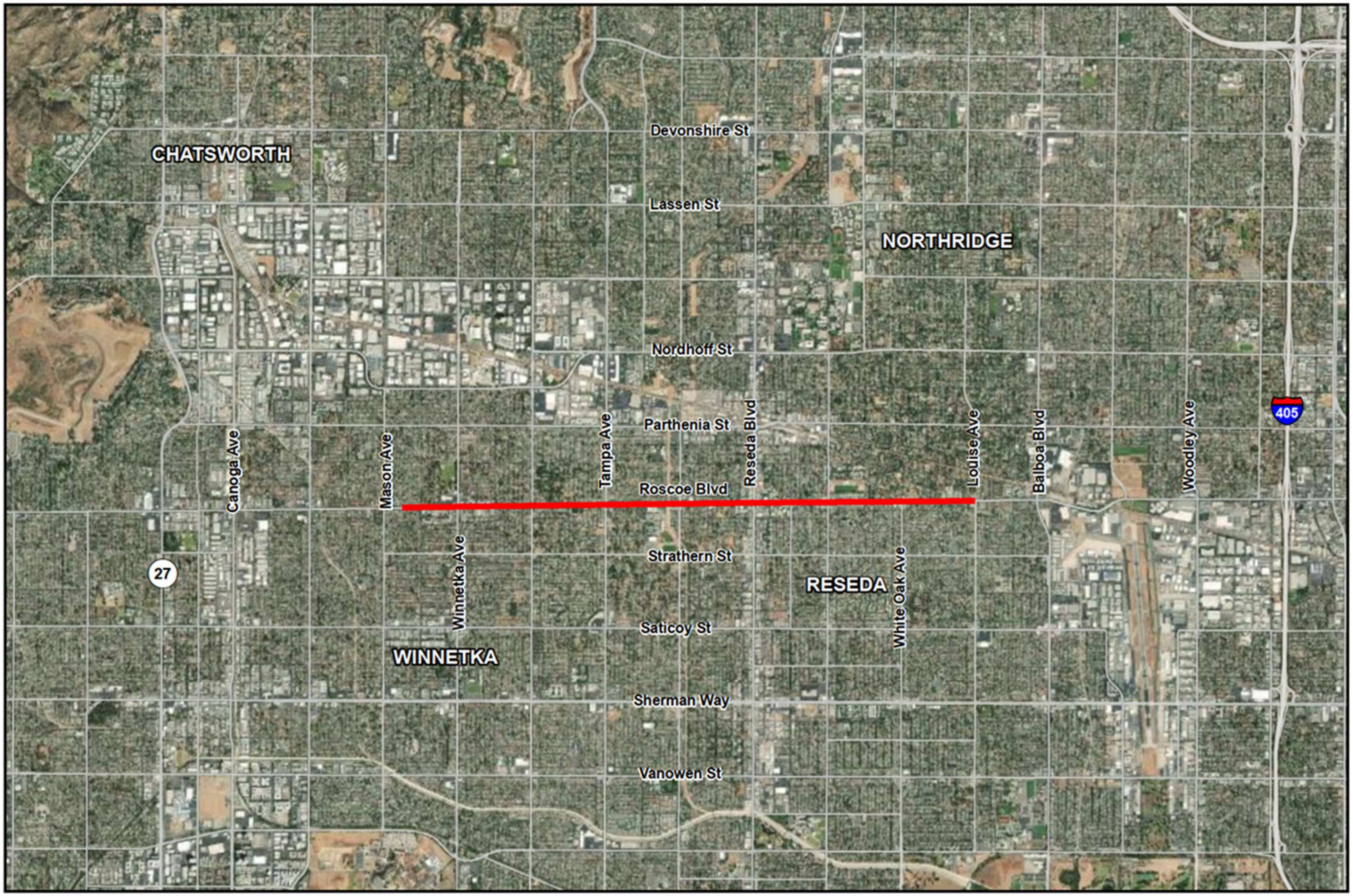


Figure 1
Regional Map



Source: Esri 2021

0 0.5 1 Miles

Proposed Roscoe Boulevard Trunk Line

Figure 2

Project Location Map

Project Construction – Construction Schedule

Construction for the proposed project is preliminarily scheduled to begin in mid-2024 and would take approximately 7 years to complete. In order to achieve this schedule, various sections of the project would be under construction concurrently in different locations within the project limits.

Project Construction – Trunk Line Open-Trench Construction

The majority of the RTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline sections are placed in the trench, the trench is backfilled, and the road is repaved. In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, these work zones would range between approximately 800 and 1,200 feet in length.

The open-trench construction process would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench would be required to provide a stable and safe working environment. The type of shoring system used would depend on soil conditions, but for environmental analysis purposes, it is assumed that steel H-beams supporting steel plates would be utilized. Prior to any excavation of the trench, the H-beams would be set as vertical piles along both edges of a length of trench, spaced to support the steel plates. Depending on soil conditions, the H-beam piles would be installed in pre-augered holes or by using a vibratory driver, or a combination of both. No impact piling-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately 1 month.

After the shoring piles are in place, work would begin on installing individual pipe segments. A trench approximately 12 feet wide and normally 10 feet deep would be excavated. This depth of trench would accommodate the 48-inch diameter trunk line, bedding material under the trunk line, and the minimum 5 feet of cover required over the line. However, in limited areas, to avoid relocating existing substructures, such as water, storm, or sanitary sewer lines crossing the RTLR alignment, the trench may need to be up to 20 feet deep.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 40 linear feet of trench could be excavated and shored in a day. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone.

After a sufficient length of trench is excavated, a pipe segment would be placed in the trench by a crane and joined to the preceding pipe segment. Once the pipe joint is complete, cement slurry bedding material would be placed under the newly installed pipe segment to secure its position. Approximately two segments of pipe, which are nominally 20 feet in length, could be installed in a day. However, as this installation is occurring, the work on the succeeding sections of the pipeline alignment would be initiated, beginning with the excavation of the trench and placement of shoring. In this manner, the work associated with adjacent sections of the pipeline installation could overlap by a few days.

Once approximately 200 feet of pipeline have been installed, the trench would be partially backfilled with a soil-cement slurry, which would be delivered by concrete trucks. As discussed above, the trunk line would require a minimum of 5 feet of cover, which would be achieved with a trench depth of approximately 10 feet. However, because the proposed 16-inch distribution mainline would be installed in the same trench at a shallower depth, the trench would be only partially backfilled after installation of the trunk line.

The 16-inch mainline, which requires only a minimum of 3 feet of cover, would then be installed within the partially backfilled trench. It would be offset both horizontally and vertically from the trunk line to provide separation between the two pipelines to avoid potential future maintenance access conflicts. The mainline pipe segments would be installed in a similar fashion as the trunk line segments. The installation of the mainline would occur while the installation of the trunk line would be underway in forward areas of the trench.

After the mainline is installed, the trench would be backfilled to just below the top of pavement. After the trench backfilling, the H-beam piles and shoring plates would be extracted, and the pile holes would be backfilled. After several hundred feet of trench have been completely backfilled, the road would be repaved to the level of the surrounding road surface.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 8 to 12 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The same basic process described above would also apply to the installation of the 60-inch line in Louise Avenue, which would extend approximately 250 feet north of Roscoe Boulevard.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the RTLR, and the 16-inch mainline within the same trench. These would include a drill rig, excavator, front loader, hydraulic cranes, forklifts, pavement saw, sweeper, utility trucks, and generators. However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 18 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity, this may require up to about 5 concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately 23 truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and mainline installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling

While the majority of the RTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling construction method would be employed to install the trunk line. This would apply to areas where large substructures that cannot be readily relocated would preclude the excavation of a trench the depth and width required for the RTLR. These structures include major sewer, storm, natural gas, or water lines or other structures, including Aliso Canyon Wash, a large concrete-lined flood control channel that crosses beneath Roscoe Boulevard. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The substructures that would conflict with the RTLR installation cross Roscoe Boulevard, usually at major intersections, and run within Roscoe Boulevard, parallel with the RTLR alignment. Preliminarily, microtunneling spans along Roscoe Boulevard identified for the project would extend beneath White Oak Avenue; from east of Lindley Avenue to west of Reseda Boulevard; from east of Wilbur Avenue to west of Vanalden Avenue; beneath Tampa Avenue; and beneath Winnetka Avenue. The total length of pipe jacking on Roscoe Boulevard is preliminarily estimated at approximately 7,600 feet of the total 21,000-foot RTLR.

While direct disturbance of most the roadway surface within a tunneling span is avoided, the microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the tunneling and jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, a minimum of one vehicle travel lane in each direction would be maintained on Roscoe Boulevard at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. The work zones surrounding each shaft would be approximately 350 feet long. They would overlap in location with the adjacent open-trench work zone, but both work zones would not be active at the same time.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 40 feet. To accommodate the tunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching shafts would be approximately 20 feet wide and 50 feet long. The receiving shafts would be approximately 20 feet wide and 30 feet long, large enough to receive the tunnel boring machine and allow it to be retrieved from the shaft.

The type of shoring system used to stabilize the shaft walls would depend on the soil and other conditions at each shaft location, but for environmental analysis purposes, it has been assumed that interlocking steel sheet piles would be used as shoring material to help control the intrusion of groundwater (which may be present at the depths of the shafts in various locations within the project limits), thereby minimizing the requirement for dewatering. After the road pavement above the shaft has been stripped, the sheet piles would be installed around the perimeter of the shaft prior to excavation. The pile installation would be achieved using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of tunneling equipment may take several weeks.

Several types of tunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits tunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 20 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded joined to the previous section to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

After the casing pipe is in place, the new trunk line pipe segments, which are also nominally 20 feet in length, would be pushed through from the launching shaft to the receiving shaft using the hydraulic jack. Radial spacers would be strapped to the segments to maintain clearance between the edges of the casing pipe. Grout would be injected to permanently fill the gap between the casing pipe and trunk line.

After the pipe is entirely installed within the tunnel, a section of pipe would be installed via an open-trench method to provide the vertical transition required to connect to the adjacent open-trench trunk line, which would have been installed at a shallower depth than the tunneled section of trunk line. The boring equipment would then be removed and transported to the succeeding tunnel span, if applicable. The shaft would be backfilled with soil-cement slurry to below top of pavement, the shoring piles would be removed, the road surface repaved and restriped, and the work zone barriers would be removed.

Because microtunneling is limited to a length of approximately 1,000 feet, in some longer spans identified for tunneling under the proposed project, it would be necessary to have intermediate shafts in addition to the shafts at the end points of the entire span.

The pipe casing would be installed in the tunnel at an average rate of about two to three segments per day, and the trunk line pipe segments would be installed at a similar rate. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 900 feet to over 3,500 feet in total length. However, the entire microtunneling operation at a given shaft location would be expected to range from approximately 8 months to 10 months. However, at intermediate shafts, where tunneling would occur sequentially in both directions, operations at a given shaft may extend to approximately 15 months.

Various pieces of construction equipment would be used to accomplish the pipe jacking installation, including an excavator, front loader, hydraulic crane, utility truck, generator, the hydraulic boring machine, tunnel ventilation systems, and the slurry separator plant. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about 22 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity.

The peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about 25 concrete trucks per day to backfill both shafts. The pipe jacking installation would require approximately 10 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Distribution Mainline Open-Trench Installation

The majority of the 16-inch distribution mainline would be installed in conjunction with the open-trench installation of the trunk line. However, where the RTLR would be installed via the microtunneling method described above, the 16-inch distribution mainline could not be accommodated in the tunnel. Furthermore, since the 16-mainline must connect to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones, it could not be installed at the depths of the RTLR microtunneling. Therefore, within the microtunneling spans, the 16-inch mainline would be installed utilizing an open-trench method similar to that described above. The only exception to this would be at the Aliso Canyon Wash crossing, where the distribution line would be installed via microtunneling under the channel.

This would require the establishment of work zones within the roadway. However, because of the relatively smaller diameter of the mainline pipe and the shallower depth requirements, the trench would be substantially smaller, at 5 feet deep and 3 to 4 feet wide, depending on whether shoring is required. The work zone may also be correspondingly narrower, and, depending on the exact alignment of the pipeline, several vehicle travel lanes may be available during construction. However, a minimum of one travel lane in each direction would be maintained at all times adjacent to the portion of the roadway under construction. An average of approximately 100 linear feet of mainline pipe would be installed each week.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the 16-inch mainline. These would include an excavator, front loader, small hydraulic crane, forklift, pavement saw, sweeper, utility trucks, and generators. However, as discussed above, these pieces of equipment would operate to perform specialized tasks, and, therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

The daily peak of haul truck trips would occur during the excavation of the trench, which may require up to 8 dump trucks trips per day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry, which would require about 5 concrete trucks per day, assuming a 10-cubic yard truck capacity. The excavation and backfilling operations may occur simultaneously in different segments of the trench, which would result in a peak of 13 truck trips per day within a given work zone.

The open-trench installation would require approximately 20 daily construction personnel in a given work zone. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone would be approximately 4 months. The process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

This same process described above would apply to the 12-inch mainline in Reseda Boulevard, where no trunk line installation would occur.

Project Construction – Regulating Stations

As mentioned above, two new regulating stations would be constructed as part of the proposed project. One would be located within Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station), and the other would be located within Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station). Although the dimensions of the two regulating station vaults would vary based on exact requirements, they would nominally require a pit approximately 25 feet deep, 20 feet wide, and 23 feet long to accommodate the vault set on base material as well as the space required to connect the pipe legs from the RTLR.

It has been assumed that interlocking corrugated steel sheet piles would be used as shoring material to stabilize the pit walls to limit groundwater intrusion, thereby minimizing the requirement for dewatering. After the road pavement has been stripped, the sheet piles would be installed prior to any excavation using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the pit would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the pit and hauled from the construction work zone to a local landfill

Once the area is excavated, base material to support the vault would be laid down, the precast concrete vault would be placed, and the pipe legs with the regulator valves would be installed within the vault envelope and extended through the vault walls to a manifold pipe, which in turn would connect to the trunk line. Support equipment, such as ladders, catwalks, and ventilation would be installed within the vault. The pit would be backfilled with soil-cement slurry to below top of pavement and the road surface repaved.

The construction of each regulating station would take approximately 4 to 6 months to complete. Installation of the stations would not occur after the installation of the trunk line, and a separate construction zone within the road right-of-way would be established for this work. Various pieces of construction equipment would be used to construct the stations. These would include an excavator, front loader, hydraulic crane, sweeper, utility trucks, and generators. These pieces of equipment would be used only for certain tasks (i.e., to excavate the vault pit or set the vault in the pit), and they would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 20 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The daily peak of delivery trucks would occur during the backfilling of the pit with the soil-cement slurry, which would require about 20 concrete trucks per day, assuming a 10-cubic yard truck capacity.

The regulating station construction would require approximately 20 daily construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Concurrent Construction

As mentioned above, in order to achieve the construction schedule proposed for the project, various sections of the project would need to be under construction concurrently in different locations within the total project limits. This may include concurrent construction within two nonadjacent open-trench trunk line work zones as well as within two nonadjacent open-trench distribution mainline work zones. Work within a microtunneling span may also occur concurrently with open-trench work elsewhere within the project limits. However, open-trench installation of the 16-inch mainline would not occur concurrently in the same area where tunneling was occurring because of potential conflicts. Tunneling work would generally be accomplished sequentially, but while actual tunneling activity is occurring within a given span, preliminary work (i.e., excavation and shoring of shafts) may occur concurrently in preparation for tunneling in another span. It is anticipated that the construction of the regulating stations would occur after the trunk line was installed.

Project Construction – Best Management Practices

An appropriate combination of monitoring and resource impact avoidance would be employed during all the construction activities. The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:

- Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.
- All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour.
- Ground cover in disturbed areas shall be replaced in a timely fashion when work is completed in the area.
- A community liaison shall be identified to address concerns regarding on-site construction activity including resolution of issues related to dust generation.
- Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Sweep streets at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, use water sweepers with reclaimed water.

Project Operations

The RTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. In addition, trunk line repair and maintenance activities would be substantially reduced after project implementation when compared to current requirements because of the poor condition of the existing Roscoe Trunk Line. No additional permanent LADWP workforce would be required to operate the RTLR.

Air Quality Topical Information

Air quality is typically characterized by ambient air concentrations of seven specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. These specific pollutants, known as criteria air pollutants, are pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal criteria air pollutants include ground-level ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), respirable particulate matter ten microns or less in diameter (PM_{10}), fine particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead. In addition to the federal criteria pollutants, the state regulates visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

Air toxics are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. Air toxics are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Air toxics include, but are not limited to, diesel PM, metals, gases absorbed by particles, and certain vapors from fuels and other sources.

Regulatory Framework

The following discussion includes relevant regulations, policies, and programs that have been adopted by federal, state, and local agencies to protect air quality and public health.

Federal

The Clean Air Act (CAA) governs air quality at the national level and the USEPA is responsible for enforcing the regulations provided in the CAA. Under the CAA, the USEPA is authorized to establish NAAQS that set protective limits on concentrations of air pollutants in ambient air. Enforcement of the NAAQS is required under the 1977 CAA and subsequent amendments. As required by the CAA, NAAQS have been established for the seven criteria air pollutants: O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and Pb. These pollutants are common byproducts of human activities and have been documented through scientific research to cause adverse health effects. The CAA grants the USEPA authority to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS concentrations have been met on a regional scale relying upon air monitoring data from the most recent three-year period. The NAAQS are summarized in **Table 1**.

TABLE 1: AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS DESIGNATIONS					
		California		Federal	
Pollutant	Averaging Period	Standards (CAAQS)	Attainment Status	Standards (NAAQS)	Attainment Status
Ozone (O_3)	1-Hour Average	0.09 ppm (180 μg/m^3)	Nonattainment	--	--
	8-Hour Average	0.070 ppm (137 μg/m^3)	Nonattainment	0.070 ppm (137 μg/m^3)	Nonattainment – Extreme
Carbon Monoxide (CO)	1-Hour Average	20 ppm (23 mg/m^3)	Attainment	35.0 ppm (40 mg/m^3)	Attainment
	8-Hour Average	9.0 ppm (10 mg/m^3)	Attainment	9.0 ppm (10 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)	1-Hour Average	0.18 ppm (338 μg/m^3)	Attainment	0.10 ppm (188 μg/m^3)	Attainment
	Annual Arithmetic Mean	0.03 ppm (57 μg/m^3)	Attainment	0.053 ppm (100 μg/m^3)	Attainment
Sulfur Dioxide (SO_2)	1-Hour Average	0.25 ppm (655 μg/m^3)	Attainment	0.075 ppm (196 μg/m^3)	Attainment
	24-Hour Average	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (365 μg/m^3)	Attainment
	Annual Arithmetic Mean	--	--	0.030 ppm (80 μg/m^3)	Attainment
Respirable Particulate Matter (PM_{10})	24-Hour Average	50 μg/m^3	Nonattainment	150 μg/m^3	Attainment (Maintenance)
	Annual Arithmetic Mean	20 μg/m^3	Nonattainment	--	--
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Average	--	--	35 μg/m^3	Nonattainment
	Annual Arithmetic Mean	12 μg/m^3	Nonattainment	12.0 μg/m^3	Nonattainment
Lead (Pb)	30-day Average	1.5 μg/m^3	Attainment	--	--
	Calendar Quarter	--	--	1.5 μg/m^3	Unclassified/ Attainment
	Rolling 3-Month Average	--	--	0.15 μg/m^3	Unclassified/ Attainment
Sulfates	24-Hour Average	25 μg/m^3	Attainment	**No Federal Standards**	
Hydrogen Sulfide	1-Hour Average	0.03 ppm (42 μg/m^3)	Attainment		
Vinyl Chloride	24-Hour Average	0.01 ppm (26 μg/m^3)	Attainment		

CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million; μg/m^3 = micrograms per cubic meter.
SOURCE: SCAQMD, *NAAQS and CAAQS Attainment Status for South Coast Air Basin*, October 2018.

State

Air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). The CCAA is administered by the California Air Resources Board (CARB) at the state level and by the air quality management districts at the regional and local levels. The CCAA requires all areas of the state to achieve and maintain the CAAQS by the earliest feasible date, which is determined in the most recent State Implementation Plan (SIP) based on existing emissions and reasonably foreseeable control measures that will be implemented in the future. The CAAQS are also summarized in **Table 1**, which also presents the attainment status designations for the Los Angeles County portion of the South Coast Air Basin (SCAB).

The CARB's statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act created California's program to reduce exposure to air toxics. Under the Toxic Air Contaminant Identification and Control Act, the CARB is required to prioritize the identification and control of air toxics emissions. In selecting substances for review, the CARB must consider criteria relating to the risk of harm to public health, such as amount or potential amount of emissions, manner of and exposure to usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community.

Regional

The 1977 Lewis Air Quality Management Act established the SCAQMD in order to coordinate air quality planning efforts throughout Southern California. The SCAQMD has jurisdiction over a total area of 10,743 square miles, consisting of the SCAB—which comprises 6,745 square miles including Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties—and the Riverside County portion of the Salton Sea and Mojave Desert Air Basins. The proposed project would be located in the west San Fernando Valley, which are situated in the SCAB portion of Los Angeles County and are within the jurisdiction of the SCAQMD.

The SCAQMD is tasked with preparing regional programs and policies designed to improve air quality within the SCAB, which are assessed and published in the form of the Air Quality Management Plan (AQMP). The AQMP is updated every four years to evaluate the effectiveness of the adopted programs and policies and to forecast attainment dates for nonattainment pollutants to support the SIP based on measured regional air quality and anticipated implementation of new technologies and emissions reductions. The most recent publication is the 2016 AQMP, which is intended to serve as a regional blueprint for achieving the federal air quality standards and healthful air.

The 2016 AQMP represents a thorough analysis of existing and potential regulatory control options, and includes available, proven, and cost-effective strategies to pursue multiple goals in promoting reductions in greenhouse gas (GHG) emissions and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The 2016 AQMP focuses on demonstrating NAAQS attainment dates for the 2008 eight-hour O_3 standard, the 2012 annual $PM_{2.5}$ standard, and the 2006 24-hour $PM_{2.5}$ standard. The 2016 AQMP acknowledged that the most significant air quality challenge in the SCAB is the reduction of nitrogen oxides (NO_X) emissions sufficient to meet the upcoming O_3 standard deadlines. The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approach attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the NAAQS are not met by the established date.

The AQMP also includes an element that is related to transportation and sustainable communities planning. Pursuant to California Health and Safety Code Section 40450, the Southern California Association of Governments (SCAG) has the responsibility of preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. The analysis incorporated into the 2016 AQMP is based on the forecasts contained within the SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). SCAG approved the 2020-2045 RTP/SCS, although these growth projections have not been incorporated by SCAQMD into the current AQMP.

The SCAQMD has also established various rules to manage and improve air quality in the SCAB. The proposed project proponent shall comply with all applicable SCAQMD Rules and Regulations pertaining to construction activities, including, but not limited to:

- Rule 402 (Nuisance) states that a person should not emit air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 (Fugitive Dust) controls fugitive dust through various requirements including, but not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site, limiting vehicle speeds on unpaved roads to 15 miles per hour, and maintaining effective cover over exposed areas. Rule 403 also prohibits the release of fugitive dust emissions from any active operation, open storage piles, or disturbed surface area beyond the property line of the emission source and prohibits particulate matter deposits on public roadways.

Existing Setting

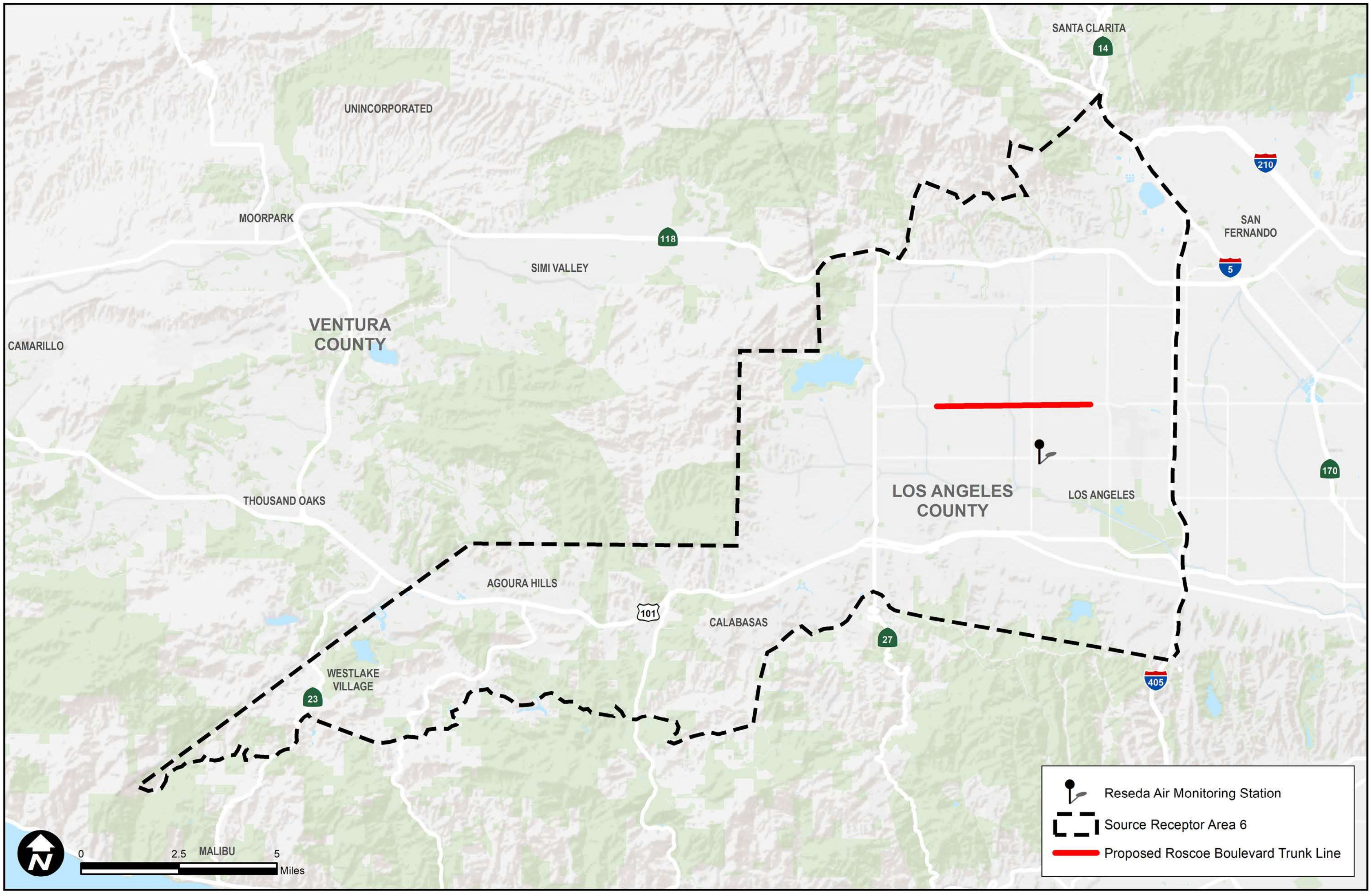
The SCAB is subject to high levels of air pollution due to the immense magnitude of emissions sources and the combination of topography, low mean atmospheric mixing height, and abundant sunshine. Although the SCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The mountains and hills surrounding the SCAB contribute to the variation of rainfall, temperature, and winds throughout the region. During the spring and early summer, pollution produced during any one day is typically blown out of the region through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the Earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants become more concentrated in urbanized areas with pollution sources of greater magnitude.

Air quality within the SCAB region is characterized by concentrations of air pollutants measured at 37 monitoring stations located throughout the SCAQMD jurisdiction. The SCAQMD jurisdiction is divided geographically into 38 source receptors areas (SRAs), each of which contains an air quality monitoring station except for SRA 7. The SRA boundaries were drawn based on proximity to the nearest air monitoring station, the local land use patterns, and surrounding topography. The project site is located in SRA 6 – West San Fernando Valley¸ which is depicted on **Figure 3**. Air quality conditions in the vicinity of the project site are best represented by monitoring data collected at the Reseda station approximately 1.5 miles south of the RTLR corridor. **Table 2** displays the air quality data statistics for pollutants measured at the Reseda station during the monitoring period 2018–2020, including the maximum pollutant concentrations and frequencies of exceeded air quality standards in each year. Since the Reseda station does not measure concentrations of PM_{10}, the data are supplemented from the Santa Clarita station located approximately 11.2 miles north of the RTLR corridor that is the most representative of local air quality.

TABLE 2: SUMMARY OF AMBIENT AIR QUALITY DATA IN THE PROJECT AREA

Pollutant	Air Quality Standards	Project Area Statistics	2018	2019	2020
Ozone (O_3)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	0.120	0.101	0.142
	State Standard: 0.090 ppm	Frequency Std. Exceeded	14	1	14
	8-hr. Average (ppm)	Maximum 8-hr. Concentration	0.101	0.087	0.115
	State Standard: 0.070 ppm	Frequency Std. Exceeded	49	6	49
Nitrogen Dioxide (NO_2)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	0.057	0.064	0.057
	State Standard: 0.18 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 0.10 ppm	Frequency Std. Exceeded	0	0	0
Carbon Monoxide (CO)	1-hr. Average (ppm)	Maximum 1-hr. Concentration	3.4	2.6	2.0
	State Standard: 20.0 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 35.0 ppm	Frequency Std. Exceeded	0	0	0
	8-hr. Average (ppm)	Maximum 8-hr. Concentration	2.1	2.2	1.7
	State Standard: 9.0 ppm	Frequency Std. Exceeded	0	0	0
	National Standard: 9.0 ppm	Frequency Std. Exceeded	0	0	0
Respirable Particulate Matter (PM_{10})	24-hr. Average (μg/m^3)	Maximum 24-hr. Concentration	49.0	62.0	48.0
	State Standard: 50 μg/m^3	Frequency Std. Exceeded	0	3	0
	National Standard: 150 μg/m^3	Frequency Std. Exceeded	0	0	0
	Annual Average (μg/m^3)	Annual Avg. Concentration	23.4	18.4	22.5
	State Standard: 20 μg/m^3	Annual Std. Exceeded?	Yes	No	Yes
Fine Particulate Matter ($PM_{2.5}$)	24-hr. Average (μg/m^3)	Maximum 24-hr. Concentration	31.0	30.0	27.6
	National Standard: 35 μg/m^3	Frequency Std. Exceeded	0	0	0
	Annual Average (μg/m^3)	Annual Avg. Concentration	10.3	9.2	10.1
	State Standard: 12 μg/m^3	Annual Std. Exceeded?	No	No	No
	National Standard: 12 μg/m^3	Annual Std. Exceeded?	No	No	No

SOURCE: SCAQMD, *Historical Data by Year – Air Quality Data Tables (2018, 2019, 2020)*, https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year, accessed September 9, 2021.



Source: TAHA, 2021.

Roscoe Trunk Line Replacement Project
Air Quality Impacts Assessment

TAHA 2021-027

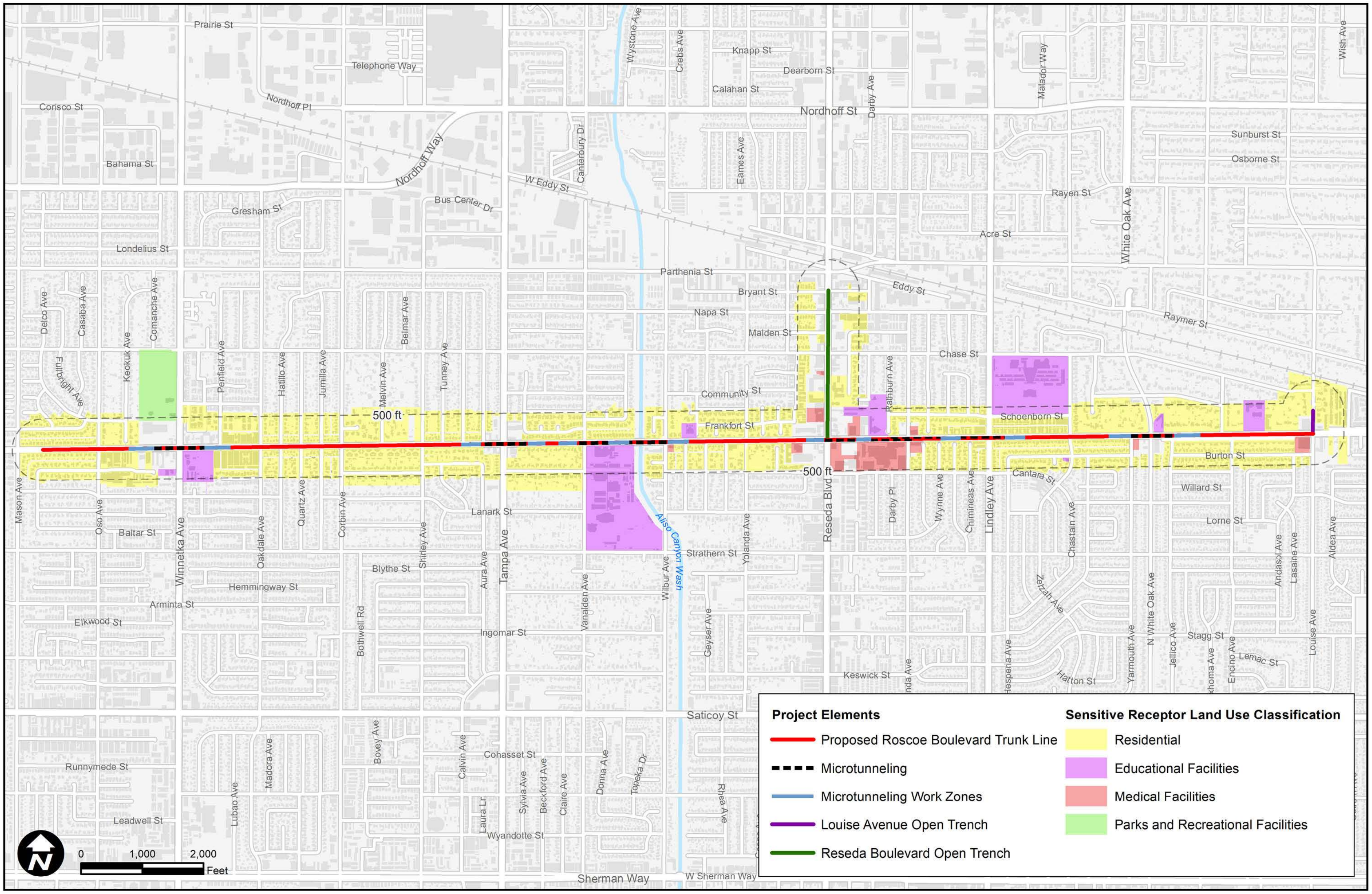
AECOM

FIGURE 3

SOURCE RECEPTOR AREA & AIR MONITORING STATION

Recorded data at the Reseda station demonstrate that ambient concentrations of O_3 exceeded the CAAQS for both the one-hour and eight-hour averaging periods numerous times in each year of the monitoring timeframe. The topography of the San Fernando Valley creates atmospheric conditions that lead to especially high levels of near-surface ozone formation. Additionally, annual concentrations of PM_{10} exceeded the CAAQS in 2018 and 2020, with several days above the state 24-hour standard in 2019. The measured concentrations of PM_{10} are consistent with the state-level nonattainment designation and attainment of the NAAQS. There were no instances of any state or federal standards being exceeded for NO_2, CO, or $PM_{2.5}$ during the most recent three-year monitoring period in the SRA 6 - West San Fernando Valley.

Regarding air pollutant concentrations, some land uses are considered more sensitive to changes in air quality than others depending on the population subgroups likely to be present and nature of occupant behaviors. The CARB has identified the following subgroups of individuals who are most susceptible to experience adverse health effects due to exposure to air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, land uses that constitute sensitive receptors where these subgroups spend extended periods of time include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The proposed project is located in a densely developed urban environment and many sensitive receptors are located near construction zones along the RTLR corridor. **Figure 4** identifies the land uses that are considered sensitive receptors that would be within 500 feet of the RTLR area of disturbance during construction activities. As displayed on the map, sensitive land use types along the proposed project corridor include residences, schools, long-term care facilities, and outdoor recreational park space.



Source: TAHA, 2021.

taha environmental planners
TAHA 2021-027

Roscoe Trunk Line Replacement Project
Air Quality Impacts Assessment

AECOM

FIGURE 4
AIR QUALITY SENSITIVE RECEPTORS

Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to Air Quality in the context of the Appendix G Environmental Checklist criteria of the *CEQA Statute and Guidelines*. Implementation of the proposed project may result in a significant environmental impact related to Air Quality if the proposed project would:

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 nonattainment under an applicable federal or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; and/or,

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Regional emissions refer to all sources of emissions that would be associated with construction and operation of a project, both those located on the project site as well as remote or mobile sources of emissions. In its original 1993 *CEQA Air Quality Handbook*, the SCAQMD established screening thresholds for regional emissions based on maximum allowable mass daily emissions from construction and operation of proposed projects that were derived from previously adopted quarterly and annual USEPA thresholds. **Table 3** shows the regional mass daily thresholds for emissions of volatile organic compounds (VOC), NO_X, CO, sulfur oxides (SO_X), and particulate matter (PM_{10} and $PM_{2.5}$) generated by projects subject to CEQA within the SCAB. The SCAQMD considers any project that would not produce daily emissions in excess of any regional threshold to be less than significant at both the project level and for cumulative impacts. Conversely, if construction or operation of a project would generate daily mass emissions exceeding the regional threshold values presented in **Table 3**, those emissions would be considered significant, and opportunities for mitigation would need to be explored and implemented as feasible.

TABLE 3: SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS – MASS DAILY EMISSIONS

Pollutant	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
CONSTRUCTION						
Regional Threshold (lbs./day)	75	100	550	150	150	55
Localized Threshold (lbs./day)	--	103	426	--	4	3
OPERATIONS						
Regional Threshold (lbs./day)	55	55	550	150	150	55
Localized Threshold (lbs./day)	--	103	426	--	1	1

Note: LST values selected for one-acre daily disturbance based on equipment inventory and 25-meter receptor distance in SRA 6.
SOURCE: SCAQMD, 2009 and 2019.

In addition to the regional thresholds, the SCAQMD originally published its guidance on using localized significance thresholds (LSTs) for CEQA impact assessments in 2003 and updated the guidance in 2008. The localized emissions analysis addresses only those sources that would be located on the project site, such as off-road equipment exhaust and fugitive area sources such as dust generation and asphalt off-gassing during construction activities. The SCAQMD LST guidance includes mass-rate lookup tables for daily emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$ that correspond to the SRA in which a project is located, the area of daily disturbance during construction activities or site size during operations, and the proximity of the nearest sensitive receptor(s).[1] Using dispersion modeling and ambient air quality data during the 2000–2002 monitoring period, the SCAQMD developed SRA-specific maximum allowable emissions levels from on-site sources to prevent the occurrence of pollutant hot-spots surrounding CEQA project sites. The LST values presented in **Table 3** are specific to SRA 6 for a construction site up to one acre with sensitive receptors within 80 feet (approximately 25 meters) and were obtained from the SCAQMD LST guidance document.

Regarding emissions of toxic air contaminants (TACs), a significant air quality impact would occur if the proposed project resulted in a carcinogenic risk above 10 excess cancers per million, or an acute hazard index (HI) equal to or greater than 1.0 at any sensitive receptor location.

Methodology

The air quality analysis conducted for the proposed project is consistent with the methods described in the SCAQMD *CEQA Air Quality Handbook* (Version 3, November 2001), as well as the updates to the *CEQA Air Quality Handbook* as provided on the SCAQMD website. Implementation of the RTLR project would not introduce new permanent operational sources of air pollutants to the SCAB, and therefore the quantitative analysis focused on pollutant emissions that would be generated during construction activities. The air quality impacts assessment sought to characterize the maximum daily emissions that would be generated by sources involved in construction of the proposed project. This task involved preparing inventories of the daily personnel, vehicles, and equipment use that would occur during each phase of construction activity for the four main components of the RTLR project:

- Trunk Line Open-Trench Construction along Roscoe Boulevard (approximately 13,500 linear feet)
- Trunk Line Microtunneling along Roscoe Boulevard (approximately 7,600 linear feet)
- Distribution Mainline Open-Trench Installation along Roscoe Boulevard (parallel to microtunnel along Roscoe Boulevard and for approximately 2,300 linear feet along Reseda Boulevard)
- Construction of Two Subterranean Regulating Stations

Generally, construction of each RTLR component would involve subsurface exploration to determine existing utility locations, stripping of roadway pavement, excavation of the open trench or microtunnel shafts or regulating station vaults, installation of the pipelines and regulating stations, backfilling of the excavated areas, and repaving of the roadway segments. The sources of air pollutant emissions associated with construction activities include on-road vehicle trip exhaust and dust generation, off-road equipment exhaust, and fugitive area source emissions such as dust from disturbed unpaved areas and truck loading as well as evaporative off-gassing from asphalt paving. The SCAQMD recommends the use of the California Emissions Estimator Model

[1]SCAQMD, *Final Localized Significance Threshold Methodology*, July 2008.

(CalEEMod, Version 2020.4.0) as a tool for quantifying emissions of air pollutants that will be generated by constructing and operating development projects under CEQA. CalEEMod was developed by the California air districts and contains an interface for entering project information related to land use type, construction schedule, construction equipment and personnel inventories, operational elements, and mitigation measures. The detailed CalEEMod output files disclosing estimated air pollutant emissions during construction of the proposed project can be found in the **Appendix**.

Daily on-road vehicle and off-road equipment activity inventories were populated in CalEEMod to characterize reasonably conservative estimates of maximum daily emissions that would occur during each type of RTLR component construction. Through consultation with the proposed project design team, scenarios were evaluated to determine which types of component construction may be occurring simultaneously during the seven-year construction period beginning in 2024. The CalEEMod tool provides regionally-specific default values for construction vehicle trip lengths, as well as emissions factors for heavy duty equipment and passenger vehicles that have been derived by the CARB through extensive air quality investigations and surveys. The default values for Los Angeles County were used in conjunction with project-specific information (i.e., daily equipment usage rates, daily personnel, daily haul truck and vendor delivery trips) to determine reasonable estimates of daily air pollutant emissions during each phase of construction. Maximum daily emissions during construction of each RTLR project component type were then combined based on anticipated activity overlap to evaluate the maximum regional and localized emissions that could occur in a worst-case scenario.

Maximum daily emissions during construction of the proposed project that were quantified in CalEEMod were used to assess potential environmental impacts related to air quality following the CEQA Guidelines Environmental Checklist criteria. With regards to AQMP consistency and potential conflicts with the attainment demonstrations for the O_3 and $PM_{2.5}$ NAAQS, the evaluation of potential impacts focused on the possibility of the proposed project exacerbating the frequency or severity of air quality violations during construction activities, as implementation of the RTLR project would not introduce any new permanent sources of air pollution to the project area nor would it create or induce growth in population, housing, or employment that could render forecasted projections that are incorporated into the AQMP attainment demonstrations invalid. The magnitude of maximum daily air pollutant emissions during RTLR construction at the regional and localized scales was used to assess whether the proposed project could exacerbate air quality violations or could result in a cumulatively considerable increase in nonattainment pollutant emissions, which include O_3 precursors VOC and NO_X as well as particulate matter (PM_{10} and $PM_{2.5}$). The potential for the proposed project to produce nuisance conditions related to odors or other noxious emissions was evaluated qualitatively.

Impact Assessment

a) Would the proposed project conflict with or obstruct implementation of the applicable air quality plan? (Less-Than-Significant Impact)

The following analysis addresses the proposed project's consistency with applicable SCAQMD and SCAG air quality planning, including the SCAQMD's 2016 AQMP and growth projections within the RTP/SCS. In accordance with the procedures established in the SCAQMD's *CEQA Air Quality Handbook*, the following criteria are required to be addressed in order to determine the consistency with applicable SCAQMD and SCAG policies:

- Would the proposed project result in any of the following?
  - An increase in the frequency or severity of existing air quality violations;
  - Cause or contribute to new air quality violations; or,
  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- Would the proposed project exceed the assumptions utilized in preparing the AQMP?
  - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
  - Does the project include air quality mitigation measures; or,
  - To what extent is project development consistent with the AQMP land use policies?

As mentioned above, the proposed project would not introduce any new permanent sources of air pollutant emissions to the SCAB, and would not spur any growth in population, housing, or employment. Therefore, the RTLR project would not result in any potential impacts related to the underlying growth projections that are incorporated into the AQMP attainment demonstration that are addressed in the second portion of the consistency criteria. The analysis of potential air quality impacts related to AQMP consistency that could occur from implementation of the proposed project was based on the possibility of air pollutant emissions during construction activities exacerbating the frequency or severity of air quality violations, which occur when ambient concentrations of air pollutants exceed the established SCAQMD air quality significance thresholds.

Construction

Construction of the proposed project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips by construction workers and haul and delivery trucks traveling to and from the project site. Fugitive dust emissions would primarily result from roadway stripping, excavation, and truck loading activities, as well as vehicle travel on the regional roadway network. NO_X emissions would be generated in off-road equipment exhaust and on-road vehicle exhaust. Fugitive VOC emissions would be associated with repaving of the disturbed roadway areas with fresh asphalt. The assessment of construction air quality impacts considered all of these emissions sources. Throughout the course of the seven-year construction period, the equipment and vehicle activity inventory would vary substantially from day to day, and the analysis invoked reasonably conservative estimates of vehicle travel and equipment usage to address potential impacts.

It is mandatory for all construction projects in the Basin to comply with SCAQMD Rule 403 for Fugitive Dust. Rule 403 control requirements include measures to prevent the generation of visible dust plumes. The following best management practices (BMPs) for fugitive dust control would be employed during all construction activities to minimize the amount of emissions produced:

- Water shall be applied to exposed surfaces at least three times per day to prevent generation of dust plumes;
- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road;
- Pave all disturbed surfaces extending at least 100 feet long and at least 20 feet wide;
- Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or,
- Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.
- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

Compliance with the provisions and BMPs promulgated by Rule 403—such as the application of water as a dust suppressant to exposed stockpiles and disturbed ground surfaces—would reduce on-site fugitive dust PM_{10} and $PM_{2.5}$ emissions associated with construction activities by approximately 61 percent. Daily emissions of VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ that would be generated during construction of the proposed project were estimated in CalEEMod. **Table 4** through **Table 6** present the maximum daily emissions that would be generated during construction of each major type of RTLR segment attributed to a single work zone. **Table 4** presents the maximum daily emissions that would be generated during open-trench construction of the RTLR project. The CalEEMod files containing the vehicle and equipment activity inventories are provided in the **Appendix**.

TABLE 4: ESTIMATED DAILY EMISSIONS – RTLR OPEN-TRENCH CONSTRUCTION						
	Maximum Daily Emissions (Pounds Per Day)					
Phase and Source Location	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
(1) SUBSURFACE EXPLORATION AND ROAD STRIPPING						
On-Site Emissions	0.3	2.9	4.3	<0.1	0.6	0.2
Off-Site Emissions	0.2	1.2	1.6	<0.1	0.6	0.2
Total	***0.5***	***4.0***	***5.9***	***<0.1***	***1.2***	***0.4***
(2) SHORING						
On-Site Emissions	0.4	3.6	3.6	<0.1	0.2	0.1
Off-Site Emissions	0.2	1.5	1.7	<0.1	0.6	0.2
Total	***0.5***	***5.1***	***5.3***	***<0.1***	***0.8***	***0.3***
(3) EXCAVATION						
On-Site Emissions	0.4	3.5	4.9	<0.1	0.2	0.2
Off-Site Emissions	0.2	5.5	2.7	<0.1	1.2	0.3
Total	***0.6***	***9.1***	***7.6***	***<0.1***	***1.4***	***0.5***
(4) PIPELINE INSTALLATION						
On-Site Emissions	0.7	7.1	6.8	<0.1	0.3	0.3
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.9***	***7.5***	***8.2***	***<0.1***	***0.8***	***0.4***
(5) TRENCH BACKFILLING						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	1.5	<0.1	0.5	0.1
Total	***0.6***	***4.7***	***8.7***	***<0.1***	***0.7***	***0.3***
(6) ROADWAY REPAVING						
On-Site Emissions	2.2	5.1	7.3	<0.1	0.3	0.2
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***2.3***	***5.5***	***8.7***	***<0.1***	***0.8***	***0.4***
OPEN-TRENCH SITE WORK ZONE ANALYSIS						
Maximum Regional Emissions	2.3	9.1	8.2	<0.1	1.4	0.5
Maximum Localized Emissions	2.2	7.1	7.3	<0.1	0.6	0.3

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

In addition to the standard open trench installation method that would be employed for a majority of the corridor (approximately 13,500 linear feet along Roscoe Boulevard), construction of the proposed project would require a microtunneling technique along roadway segments and under intersections where substantial subsurface utility structures are present, comprising approximately 7,600 linear feet along Roscoe Boulevard. Microtunneling activities would involve the excavation of launching (approximately 20 feet by 50 feet) and receiving (approximately 20 feet by 30 feet) shafts at either end of the work zone to accommodate the tunnel boring machine, at depths of 40 to 50 feet. **Table 5** presents the results of the emissions analysis for a single work zone engaged in the RTLR microtunneling activities. Refer to the **Appendix** for detailed input data.

TABLE 5: ESTIMATED DAILY EMISSIONS – RTLR MICROTUNNEL CONSTRUCTION						
Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) SUBSURFACE EXPLORATION AND ROAD STRIPPING						
On-Site Emissions	0.4	3.2	4.7	<0.1	0.8	0.2
Off-Site Emissions	0.1	1.4	1.0	<0.1	0.4	0.1
Total	***0.4***	***4.6***	***5.8***	***<0.1***	***1.2***	***0.4***
(2) SHEET PILE SHORING						
On-Site Emissions	0.4	3.8	3.9	<0.1	0.2	0.2
Off-Site Emissions	0.1	3.0	1.6	<0.1	0.7	02
Total	***0.5***	***6.8***	***5.5***	***<0.1***	***0.8***	***0.4***
(3) SHAFT EXCAVATION						
On-Site Emissions	0.4	4.0	5.4	<0.1	0.2	0.2
Off-Site Emissions	0.2	6.9	2.4	<0.1	1.1	0.3
Total	***0.6***	***10.9***	***7.8***	***<0.1***	***1.3***	***0.5***
(4) MICROTUNNEL CASING AND PIPING						
On-Site Emissions	1.0	9.3	10.2	<0.1	0.4	0.4
Off-Site Emissions	0.1	1.7	1.3	<0.1	0.5	01
Total	***1.1***	***11.0***	***11.4***	***<0.1***	***0.9***	***0.5***
(5) SHAFT BACKFILLING						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.2	4.1	2.2	<0.1	0.9	0.3
Total	***0.7***	***8.2***	***9.4***	***<0.1***	***1.1***	***0.5***
(6) ROADWAY REPAVING						
On-Site Emissions	0.6	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	1.7	1.3	<0.1	0.5	0.1
Total	***0.7***	***6.1***	***7.7***	***<0.1***	***0.7***	***0.3***
MICROTUNNEL SITE WORK ZONE ANALYSIS						
Maximum Regional Emissions	1.1	11.0	11.4	<0.1	1.3	0.5
Maximum Localized Emissions	1.0	9.3	10.2	<0.1	0.8	0.4

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

At segments of Roscoe Boulevard where microtunneling would be necessary to install the trunk line at substantial depths of up to 40 to 50 feet, the 16-inch distribution mainline would be installed using a shallow open-trench method requiring only approximately five feet of excavation depth. **Table 6** presents the results of the emissions modeling for the shallow open-trench construction activities to install the distribution mainline parallel to segments of trunk line microtunneling. Refer to the **Appendix** for detailed model input data.

TABLE 6: ESTIMATED DAILY EMISSIONS – DISTRIBUTION MAINLINE OPEN-TRENCH						
Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) ROAD STRIPPING						
On-Site Emissions	0.2	1.3	2.1	<0.1	0.5	0.1
Off-Site Emissions	0.1	1.7	1.1	<0.1	0.4	0.1
Total	***0.2***	***3.0***	***3.2***	***<0.1***	***0.9***	***0.3***
(2) SHORING						
On-Site Emissions	0.2	2.1	3.0	<0.1	0.1	0.1
Off-Site Emissions	0.1	0.4	0.8	<0.1	0.3	0.1
Total	***0.3***	***2.5***	***3.8***	***<0.1***	***0.4***	***0.2***
(3) TRENCH EXCAVATION						
On-Site Emissions	0.3	2.8	4.1	<0.1	0.1	0.1
Off-Site Emissions	0.1	2.2	1.2	<0.1	0.5	0.2
Total	***0.4***	***5.0***	***5.3***	***<0.1***	***0.7***	***0.3***
(4) PIPELINE INSTALLATION						
On-Site Emissions	0.5	5.1	5.3	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.4	0.8	<0.1	0.3	0.1
Total	***0.6***	***5.5***	***6.1***	***<0.1***	***0.5***	***0.3***
(5) TRENCH BACKFILLING						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	0.8	<0.1	0.3	0.1
Total	***0.6***	***4.6***	***8.0***	***<0.1***	***0.5***	***0.3***
(6) ROADWAY REPAVING						
On-Site Emissions	0.8	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.5	0.8	<0.1	0.3	0.1
Total	***0.9***	***4.9***	***7.2***	***<0.1***	***0.5***	***0.3***
DISTRIBUTION MAINLINE SITE WORK ZONE ANALYSIS						
Maximum Regional Emissions	0.9	5.5	8.0	<0.1	0.5	0.3
Maximum Localized Emissions	0.8	5.1	7.2	<0.1	0.5	0.2

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

Throughout the construction period, multiple crews would be working on different components of the RTLR project simultaneously, excluding the regulating stations which would be installed following completion of the pipeline components. Although logistical constraints would preclude concurrent construction of adjacent microtunneling and shallow open-trench distribution mainline installation within the same work zone, it is possible that multiple work zones of each type of activity would be ongoing at the same time at various locations along the four-mile corridor.

Table 7 presents the regional emissions analysis of potentially overlapping activities, assuming up to five work zones could be active on a worst-case day. The analysis conservatively assumed that two RTLR open-trench work zones, two microtunnel work zones, and one distribution mainline work zone would be involved in activities producing maximum daily emissions at each site. As shown in **Table 7**, the combined work zones analysis, construction of the proposed project would not generate emissions exceeding any applicable SCAQMD regional or localized threshold, even when assuming maximum possible emissions at each individual site. The combined emissions from five work zones along the RTLR corridor would not exceed the LST screening values that apply to a singular construction site, representing a protectively conservative approach as the work zones would likely be at considerable distances from one another.

TABLE 7: EMISSIONS ANALYSIS – CONCURRENT PIPELINE INSTALLATION ACTIVITIES

Project Component	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
REGIONAL EMISSIONS – INDIVIDUAL SITES						
RTLR Open-Trench Construction	2.3	9.1	8.2	<0.1	1.4	0.5
RTLR Microtunnel Construction	1.1	11.0	11.4	<0.1	1.3	0.5
Distribution Mainline Open-Trench	0.9	5.5	8.0	<0.1	0.5	0.3
REGIONAL EMISSIONS ANALYSIS						
Maximum Daily Activities (Five Sites)	**7.8**	**45.6**	**48.4**	**<0.1**	**6.3**	**2.4**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
LOCALIZED EMISSIONS – INDIVIDUAL SITES						
RTLR Open-Trench Construction	2.2	7.1	7.3	<0.1	0.6	0.3
RTLR Microtunnel Construction	1.0	9.3	10.2	<0.1	0.8	0.4
Distribution Mainline Open-Trench	0.8	5.1	7.2	<0.1	0.5	0.2
LOCALIZED EMISSIONS ANALYSIS						
Maximum Daily Activities (Five Sites)	**7.2**	**37.9**	**42.1**		**3.2**	**1.6**
SCAQMD Localized Threshold	-	103	426	-	4	3
Exceed Threshold?	**-**	***No***	***No***	**-**	***No***	***No***

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

Following installation of the trunk line and distribution line segments, two regulating stations would be constructed as part of the proposed project. One station would be located within Roscoe Boulevard west of Reseda Boulevard and the other station would be located within Penfield Avenue north of Roscoe Boulevard. Construction of each regulating station would take four to six months, and for the purposes of this analysis it was assumed that construction of the two stations would overlap. **Table 8** presents the daily air pollutant emissions that would be generated during each phase of regulating station construction, and the regional and localized comparative analyses in the bottom portion accounted for a doubling of the maximum daily emissions from one work zone.

TABLE 8: ESTIMATED DAILY EMISSIONS – REGULATING STATIONS CONSTRUCTION						
Phase and Source Location	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
(1) ROAD STRIPPING						
On-Site Emissions	0.3	2.4	3.9	<0.1	0.5	0.2
Off-Site Emissions	0.2	2.8	2.0	<0.1	0.8	0.2
Total	***0.5***	***5.3***	***6.0***	***<0.1***	***1.4***	***0.4***
(2) SHORING						
On-Site Emissions	0.4	3.6	3.6	<0.1	0.2	0.1
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.5***	***4.0***	***5.1***	***<0.1***	***0.7***	***0.3***
(3) EXCAVATION						
On-Site Emissions	0.4	3.5	4.9	<0.1	0.2	0.2
Off-Site Emissions	0.2	5.5	2.7	<0.1	1.2	0.3
Total	***0.6***	***9.1***	***7.6***	***<0.1***	***1.4***	***0.5***
(4) VAULT INSTALLATION						
On-Site Emissions	0.6	5.8	6.2	<0.1	0.3	0.3
Off-Site Emissions	0.2	0.9	1.6	<0.1	0.6	0.2
Total	***0.8***	***6.7***	***7.8***	***<0.1***	***0.9***	***0.4***
(5) PIT BACKFILLING						
On-Site Emissions	0.5	4.2	7.2	<0.1	0.2	0.2
Off-Site Emissions	0.2	1.7	1.9	<0.1	0.7	0.2
Total	***0.7***	***5.9***	***9.1***	***<0.1***	***0.9***	***0.4***
(6) ROADWAY REPAVING						
On-Site Emissions	0.5	4.5	6.4	<0.1	0.2	0.2
Off-Site Emissions	0.1	0.4	1.5	<0.1	0.5	0.1
Total	***0.7***	***4.9***	***7.8***	***<0.1***	***0.7***	***0.3***
SIMULTANEOUS REGULATING STATIONS WORK ZONE ANALYSIS						
Maximum Regional Emissions	**1.5**	**18.1**	**18.2**	**<0.1**	**2.7**	**1.0**
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***
Maximum Localized Emissions	**1.2**	**11.6**	**14.3**	**<0.1**	**1.1**	**0.5**
SCAQMD SRA 6 LST	-	103	426	-	4	3
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Note: Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

Based on the results of the combined activities analysis and the regulating stations analysis, construction of the proposed project would not have any potential to conflict with or obstruct implementation of the AQMP based on the air quality violation criterion. When considering five active work zones—each producing its maximum daily emissions—total regional and localized NO_X emissions would remain below half of the applicable corresponding thresholds. Localized particulate matter emissions from the combined sites would remain below the LST values that apply to a singular one-acre construction site within SRA 6. Therefore, this impact would be less than significant, and no mitigation measures are required.

Upon completion of construction activities, vehicle and equipment sources employed to implement the proposed project would no longer be active and producing emissions. The construction workforce would comprise LADWP crews and contractors assembled from the local area and is not anticipated to introduce new permanent job growth to the region. As discussed previously, construction of the proposed project would have no impact related to the second AQMP consistency criterion related to assumptions incorporated into the regional growth forecasts for population, housing, and employment within the City of Los Angeles.

Operations

Operational activities associated with the proposed project would be minimal, and no new permanent sources of air pollutant emissions would be introduced to the project area. The entirety of proposed project facilities would be located underground, and implementation of the proposed project would not expand the LADWP workforce. The occasional vehicle trips would produce negligible emissions of air pollutants at the regional level. Operation of the proposed project would not have any potential to exacerbate the frequency or severity of air quality violations and would result in a less-than-significant air quality impact related to air quality violations.

The second consistency criterion requires that the proposed project not exceed the assumptions in the AQMP, thereby rendering the regional emissions inventory inaccurate. Implementation of the proposed project would not introduce new population, housing, and employment projections for the region would not be affected. The proposed project would not have any potential to result in growth that would exceed the projections incorporated into the AQMP or the RTP/SCS. The proposed project would not interfere with air pollution control measures listed in the 2016 AQMP and would not conflict with the goals of the City of Los Angeles General Plan Air Quality Element.

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard? (Less-than-Significant Impact)

The SCAB is currently designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ under the State standards and nonattainment for O_3 and $PM_{2.5}$ under the federal standards. Therefore, a project may result in a cumulatively considerable air quality impact under this criterion if daily emissions of ozone precursors (VOC and NO_X) or particulate matter (PM_{10} and $PM_{2.5}$) exceed applicable air quality thresholds of significance established by the SCAQMD. The SCAQMD designed the regional mass daily thresholds and LST values to prevent projects from exceeding the ambient air quality standards and potentially resulting in air quality violations that could obstruct or delay implementation of the AQMP. The SCAQMD suggests that if any quantitative air quality significance threshold is exceeded by an individual project during construction activities or operation, that project is considered cumulatively considerable and would be required to implement effective and feasible mitigation measures to reduce air quality impacts. Conversely, the SCAQMD promulgates that if an individual project would not exceed the regional mass daily thresholds or LST values, then its emissions are generally considered to not be cumulatively considerable, and the impact would be less than significant. This method of impact determination allows for the screening of individual projects that would not represent substantial new sources of emissions in the Basin; it also serves to exclude smaller projects from the responsibility of identifying potentially concurrent new or proposed construction and operation emissions nearby since the incremental contribution to regional emissions is minor.

Construction

As shown in **Table 7** and **Table 8**, construction of the proposed project would not generate emissions in excess of any of the applicable regional or localized thresholds established by the SCAQMD. All construction activities would be conducted in accordance with the BMPs pursuant to SCAQMD Rule 403 to minimize fugitive dust emissions. Emissions produced during construction activities associated with the RTLR project would not be cumulatively considerable, and this impact would be less than significant. No mitigation measures are identified as necessary during construction of the proposed project.

Operation

Following the completion of construction activities, all major components of the proposed project would be located underground and would not generate emissions of air pollutants. Implementation of the RTLR project would not introduce any land use developments or LADWP facilities that would generate new vehicle trips or install new stationary sources of emissions. Therefore, the proposed project would not generate cumulatively considerable emissions of ozone precursors or particulate matter and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

c) Would the proposed project expose sensitive receptors to substantial pollutant concentrations? (Less-Than-Significant Impact)

Construction

The SCAQMD devised its LST values to prevent the occurrence of localized hot spots of criteria pollutant concentrations at sensitive receptor locations surrounding the project site. The LST values were determined using emissions modeling based on ambient air quality measured throughout the SCAB. If maximum daily emissions remain below the LST values during construction activities, it is highly unlikely that air pollutant concentrations in ambient air would reach substantial levels sufficient to create public health concerns for sensitive receptors. As shown in **Table 7** and **Table 8**, maximum daily emissions of criteria pollutants and O_3 precursors from sources located on the project site would not exceed any applicable LST values. Additionally, the use of construction equipment in any particular location would be intermittent and temporary, such that nearby residential, educational, and medical sensitive receptors would not be exposed to recurring high levels of emitted pollutants.

With regards to TAC emissions, off-road equipment exhaust would contain diesel particulate matter, which is the most prevalent air toxic in the greater Los Angeles region. However, each individual piece of equipment would only be in operation for a portion of the workdays. Carcinogenic risks are typically assessed on timescales of several years to multiple decades, as the risk accumulates over extended periods of exposure. Given that construction activities would only be occurring during the daytime when the atmospheric inversion layer is at its highest and the greatest amount of pollutant dispersion occurs, there is little potential for TAC concentrations to reach levels that would be hazardous for nearby sensitive receptors. Therefore, construction of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of air pollution. This impact would be less than significant, and no mitigation is required.

Operations

Following the completion of construction activities, operation of the proposed project would not involve any active sources of air pollutant emissions. There would be no potential for sensitive receptors located along the RTLR project corridor to be exposed to substantial pollutant concentrations resulting from sources associated with the proposed project. Operation of the proposed project would result in no impact related to sensitive receptor exposures to pollutant concentrations, and no mitigation measures would be warranted.

Mitigation Measures

No mitigation measures are required.

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

Construction

Odors are the only potential construction emissions other than the sources addressed above. Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other finishes. Odors from these sources would be localized and generally confined to the immediate area surrounding the project site and would be temporary in nature and would not persist beyond the termination of construction activities. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. LADWP will ensure that activities comply with SCAQMD Rules 402 (Nuisance) and 401 (Visible Emissions) to prevent the occurrence of public nuisances and visible dust plumes traveling off-site. Therefore, the proposed project would result in a less-than-significant impact related to construction odors and other nuisances.

Operations

Odors are the only potential operational emissions other than the sources addressed above. Given the nature and location of the project facilities, the project has no potential to generate new, adverse odors. Therefore, the proposed project would result in a less-than-significant impact related to operational odors or other emissions that may have the potential to cause a public nuisance.

Mitigation Measures

No mitigation measures are required.

References

California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod) Version 2020.4.0 User's Guide*, May 2021.

California Air Resources Board, *Ambient Air Quality Standards*, May 2016.

South Coast Air Quality Management District, *CEQA Air Quality Handbook (Version 3)*, November 2001.

South Coast Air Quality Management District, *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds*, 2013.

South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology Appendix C Mass Rate Lookup Tables*, updated October 21, 2009.

South Coast Air Quality Management District, *Historical Data By Year – Air Quality Data Tables (2017, 2018, 2019)*, accessed September 9, 2021.

South Coast Air Quality Management District, *SCAQMD Air Quality Significance Thresholds*, March 2015.

Southern California Association of Governments, *2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*, April 2016.

Southern California Association of Governments, *Connect SoCal 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy*, May 2020.

United States Environmental Protection Agency, *The Green Book Nonattainment Areas for Criteria Pollutants*, https://www.epa.gov/green-book, December 2020.

Appendix

- CalEEMod Daily Output Files:
    - Roscoe Trunk Line Open-Trench Construction
    - Roscoe Trunk Line Microtunnel Construction
    - Distribution Mainline Shallow Open-Trench Construction
    - Regulating Stations Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Roscoe Trunk Line Replacement Project - Open Trench

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	3.83	Acre	3.83	166,834.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume approximately 12.5 foot disturbance width for 13,340 LF along Roscoe Blvd

Construction Phase - Demo = subsurface exploration & pavement removal
Site Prep = shoring piles
Grading = trench excavation
BC = pipeline install
trenching = backfill trench
paving = repave roadway

Off-road Equipment - Project Inventory
Other Material Handling Equipment = cement slurry pourer

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Trip Inventory

Demolition - Approx. 20 CY max per day (12.5 ft x 40 ft x 1 ft / 27) * 1.2 = 25 tons

Grading - Approx Volumes:

Max export during excavation = approx. 18 trucks x 14 CY/truck ~ 250 CY/day

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	8.00	1.00
tblConstructionPhase	NumDays	230.00	1.00
tblConstructionPhase	NumDays	18.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	50.00
tblGrading	MaterialExported	0.00	250.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	2.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	27.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	70.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	40.00

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					
2023	2.3353	9.0554	8.7471	0.0352	1.6571	0.3222	1.8044	0.3190	0.3055	0.5038	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**2.3353**	**9.0554**	**8.7471**	**0.0352**	**1.6571**	**0.3222**	**1.8044**	**0.3190**	**0.3055**	**0.5038**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

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					
2023	2.3353	9.0554	8.7471	0.0352	1.1583	0.3222	1.3624	0.3122	0.3055	0.5012	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**2.3353**	**9.0554**	**8.7471**	**0.0352**	**1.1583**	**0.3222**	**1.3624**	**0.3122**	**0.3055**	**0.5012**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

	ROG	**NOx**	**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**	**30.10**	**0.00**	**24.50**	**2.12**	**0.00**	**0.52**	**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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**8.9000e-004**

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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**8.9000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Grading	Grading	10/11/2023	10/11/2023	5	1	
4	Install Pipeline	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Trench	Trenching	10/13/2023	10/13/2023	5	1	
6	Paving	Paving	10/14/2023	10/20/2023	6	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.83

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	1.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Shoring	Cranes	1	4.00	231	0.29
Shoring	Excavators	1	4.00	158	0.38
Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Grading	Cranes	1	2.00	231	0.29
Grading	Excavators	1	6.00	158	0.38
Grading	Forklifts	1	2.00	89	0.20
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Pipeline	Cranes	1	7.00	231	0.29
Install Pipeline	Generator Sets	1	7.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	40.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	40.00	8.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	40.00	0.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	40.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving		3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282		777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**1.0700**	**0.1380**	**1.2080**	**0.1620**	**0.1282**	**0.2902**		**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1539**	**1.1886**	**1.6148**	**8.4300e-003**	**0.5871**	**9.3000e-003**	**0.5964**	**0.1570**	**8.8000e-003**	**0.1658**		**898.3607**	**898.3607**	**0.0385**	**0.0916**	**926.6176**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282	0.0000	777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**0.4173**	**0.1380**	**0.5553**	**0.0632**	**0.1282**	**0.1914**	**0.0000**	**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Subsurface Exploration & Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1539**	**1.1886**	**1.6148**	**8.4300e-003**	**0.5871**	**9.3000e-003**	**0.5964**	**0.1570**	**8.8000e-003**	**0.1658**		**898.3607**	**898.3607**	**0.0385**	**0.0916**	**926.6176**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.6500e-003	0.0000	5.6500e-003	8.6000e-004	0.0000	8.6000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.6500e-003**	**0.1530**	**0.1587**	**8.6000e-004**	**0.1408**	**0.1417**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1627**	**1.5101**	**1.7375**	**9.9200e-003**	**0.6384**	**0.0109**	**0.6492**	**0.1717**	**0.0103**	**0.1820**		**1,058.8569**	**1,058.8569**	**0.0439**	**0.1147**	**1,094.1304**

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					2.2100e-003	0.0000	2.2100e-003	3.3000e-004	0.0000	3.3000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**2.2100e-003**	**0.1530**	**0.1552**	**3.3000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1627**	**1.5101**	**1.7375**	**9.9200e-003**	**0.6384**	**0.0109**	**0.6492**	**0.1717**	**0.0103**	**0.1820**		**1,058.8569**	**1,058.8569**	**0.0439**	**0.1147**	**1,094.1304**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0283	0.0000	0.0283	4.2800e-003	0.0000	4.2800e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549		777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0283**	**0.1684**	**0.1966**	**4.2800e-003**	**0.1549**	**0.1592**		**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.350 0	2,573.350 0	0.1414	0.4087	2,698.663 5
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.040 7**	**2,957.040 7**	**0.1516**	**0.4185**	**3,085.548 4**

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					0.0110	0.0000	0.0110	1.6700e-003	0.0000	1.6700e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549	0.0000	777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0110**	**0.1684**	**0.1794**	**1.6700e-003**	**0.1549**	**0.1566**	**0.0000**	**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.350 0	2,573.350 0	0.1414	0.4087	2,698.663 5
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.040 7**	**2,957.040 7**	**0.1516**	**0.4185**	**3,085.548 4**

3.5 Install Pipeline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7076	7.0584	6.7682	0.0135		0.3180	0.3180		0.3015	0.3015		1,298.001 5	1,298.001 5	0.2675		1,304.688 2
Total	**0.7076**	**7.0584**	**6.7682**	**0.0135**		**0.3180**	**0.3180**		**0.3015**	**0.3015**		**1,298.001 5**	**1,298.001 5**	**0.2675**		**1,304.688 2**

3.5 Install Pipeline - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.7076	7.0584	6.7682	0.0135		0.3180	0.3180		0.3015	0.3015	0.0000	1,298.0015	1,298.0015	0.2675		1,304.6882
Total	**0.7076**	**7.0584**	**6.7682**	**0.0135**		**0.3180**	**0.3180**		**0.3015**	**0.3015**	**0.0000**	**1,298.0015**	**1,298.0015**	**0.2675**		**1,304.6882**

3.5 Install Pipeline - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

3.6 Backfill Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1487**	**0.5005**	**1.4857**	**5.6100e-003**	**0.5112**	**4.6400e-003**	**0.5158**	**0.1370**	**4.3400e-003**	**0.1414**		**584.3110**	**584.3110**	**0.0169**	**0.0387**	**596.2760**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1487**	**0.5005**	**1.4857**	**5.6100e-003**	**0.5112**	**4.6400e-003**	**0.5158**	**0.1370**	**4.3400e-003**	**0.1414**		**584.3110**	**584.3110**	**0.0169**	**0.0387**	**596.2760**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5164	5.0958	7.2921	0.0114		0.2551	0.2551		0.2347	0.2347		1,103.7921	1,103.7921	0.3570		1,112.7168
Paving	1.6724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1888**	**5.0958**	**7.2921**	**0.0114**		**0.2551**	**0.2551**		**0.2347**	**0.2347**		**1,103.7921**	**1,103.7921**	**0.3570**		**1,112.7168**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.5164	5.0958	7.2921	0.0114		0.2551	0.2551		0.2347	0.2347	0.0000	1,103.7921	1,103.7921	0.3570		1,112.7168
Paving	1.6724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1888**	**5.0958**	**7.2921**	**0.0114**		**0.2551**	**0.2551**		**0.2347**	**0.2347**	**0.0000**	**1,103.7921**	**1,103.7921**	**0.3570**		**1,112.7168**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Unmitigated	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0591					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**		**8.9000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0591					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**		**8.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Roscoe Trunk Line Replacement Project - Microtunnel

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Microtunnel Construction Only

Land Use -

Construction Phase - k

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Inventory

Demolition - Project Inventory

Grading - Project Inventory

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	60.00
tblGrading	MaterialExported	0.00	300.00
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	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblTripsAndVMT	HaulingTripNumber	7.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	2.00	40.00

tblTripsAndVMT	VendorTripNumber	0.00	100.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	5.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00

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					
2023	1.1214	10.9738	11.4476	0.0415	2.0035	0.4287	2.1672	0.3503	0.4131	0.5462	0.0000	4,415.3578	4,415.3578	0.5075	0.5158	4,581.7374
Maximum	**1.1214**	**10.9738**	**11.4476**	**0.0415**	**2.0035**	**0.4287**	**2.1672**	**0.3503**	**0.4131**	**0.5462**	**0.0000**	**4,415.3578**	**4,415.3578**	**0.5075**	**0.5158**	**4,581.7374**

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					
2023	1.1214	10.9738	11.4476	0.0415	1.1120	0.4287	1.3395	0.3013	0.4131	0.5462	0.0000	4,415.3578	4,415.3578	0.5075	0.5158	4,581.7374
Maximum	**1.1214**	**10.9738**	**11.4476**	**0.0415**	**1.1120**	**0.4287**	**1.3395**	**0.3013**	**0.4131**	**0.5462**	**0.0000**	**4,415.3578**	**4,415.3578**	**0.5075**	**0.5158**	**4,581.7374**

	ROG	**NOx**	**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**	**44.50**	**0.00**	**38.19**	**14.00**	**0.00**	**0.00**	**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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Install Sheet Pile Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Shaft Excavation	Grading	10/11/2023	10/11/2023	5	1	
4	Install Casing & Trunk Line	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Shafts	Trenching	10/13/2023	10/13/2023	5	1	
6	Repave Roadway	Paving	10/14/2023	10/19/2023	6	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.25

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Install Sheet Pile Shoring	Cranes	1	4.00	231	0.29
Install Sheet Pile Shoring	Excavators	1	4.00	158	0.38
Install Sheet Pile Shoring	Forklifts	1	2.00	89	0.20
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shaft Excavation	Bore/Drill Rigs	1	2.00	221	0.50
Shaft Excavation	Cranes	1	2.00	231	0.29
Shaft Excavation	Excavators	1	6.00	158	0.38
Shaft Excavation	Forklifts	1	2.00	89	0.20
Shaft Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Casing & Trunk Line	Bore/Drill Rigs	1	7.00	221	0.50
Install Casing & Trunk Line	Cranes	1	4.00	231	0.29
Install Casing & Trunk Line	Forklifts	1	7.00	89	0.20
Install Casing & Trunk Line	Generator Sets	1	7.00	84	0.74
Install Casing & Trunk Line	Pumps	1	7.00	84	0.74
Backfill Shafts	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Shafts	Excavators	1	6.00	158	0.38
Backfill Shafts	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Shafts	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Roadway	Pavers	1	7.00	130	0.42
Repave Roadway	Paving Equipment	1	7.00	132	0.36
Repave Roadway	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Install Sheet Pile Shoring	5	20.00	40.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shaft Excavation	5	20.00	0.00	50.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Casing & Trunk Line	5	20.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Shafts	4	20.00	100.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Roadway	3	20.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.6049	0.0000	1.6049	0.2430	0.0000	0.2430			0.0000			0.0000
Off-Road	0.3585	3.1779	4.7395	8.8400e-003		0.1540	0.1540		0.1443	0.1443		851.8737	851.8737	0.2349		857.7461
Total	**0.3585**	**3.1779**	**4.7395**	**8.8400e-003**	**1.6049**	**0.1540**	**1.7590**	**0.2430**	**0.1443**	**0.3873**		**851.8737**	**851.8737**	**0.2349**		**857.7461**

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0891**	**1.4117**	**1.0192**	**7.7200e-003**	**0.3986**	**9.6000e-003**	**0.4082**	**0.1073**	**9.1400e-003**	**0.1164**		**835.1828**	**835.1828**	**0.0405**	**0.1071**	**868.1083**

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					0.6259	0.0000	0.6259	0.0948	0.0000	0.0948			0.0000			0.0000
Off-Road	0.3585	3.1779	4.7395	8.8400e-003		0.1540	0.1540		0.1443	0.1443	0.0000	851.8737	851.8737	0.2349		857.7461
Total	**0.3585**	**3.1779**	**4.7395**	**8.8400e-003**	**0.6259**	**0.1540**	**0.7800**	**0.0948**	**0.1443**	**0.2391**	**0.0000**	**851.8737**	**851.8737**	**0.2349**		**857.7461**

3.2 Subsurface Exploration & Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0891**	**1.4117**	**1.0192**	**7.7200e-003**	**0.3986**	**9.6000e-003**	**0.4082**	**0.1073**	**9.1400e-003**	**0.1164**		**835.1828**	**835.1828**	**0.0405**	**0.1071**	**868.1083**

3.3 Install Sheet Pile Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7900e-003	0.0000	6.7900e-003	1.0300e-003	0.0000	1.0300e-003			0.0000			0.0000
Off-Road	0.3873	3.8158	3.8983	9.0000e-003		0.1679	0.1679		0.1544	0.1544		870.7151	870.7151	0.2816		877.7553
Total	**0.3873**	**3.8158**	**3.8983**	**9.0000e-003**	**6.7900e-003**	**0.1679**	**0.1747**	**1.0300e-003**	**0.1544**	**0.1555**		**870.7151**	**870.7151**	**0.2816**		**877.7553**

3.3 Install Sheet Pile Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1336**	**3.0192**	**1.6327**	**0.0152**	**0.6548**	**0.0174**	**0.6722**	**0.1811**	**0.0166**	**0.1976**		**1,637.6641**	**1,637.6641**	**0.0672**	**0.2226**	**1,705.6727**

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					2.6500e-003	0.0000	2.6500e-003	4.0000e-004	0.0000	4.0000e-004			0.0000			0.0000
Off-Road	0.3873	3.8158	3.8983	9.0000e-003		0.1679	0.1679		0.1544	0.1544	0.0000	870.7151	870.7151	0.2816		877.7553
Total	**0.3873**	**3.8158**	**3.8983**	**9.0000e-003**	**2.6500e-003**	**0.1679**	**0.1705**	**4.0000e-004**	**0.1544**	**0.1548**	**0.0000**	**870.7151**	**870.7151**	**0.2816**		**877.7553**

3.3 Install Sheet Pile Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1336**	**3.0192**	**1.6327**	**0.0152**	**0.6548**	**0.0174**	**0.6722**	**0.1811**	**0.0166**	**0.1976**		**1,637.6641**	**1,637.6641**	**0.0672**	**0.2226**	**1,705.6727**

3.4 Shaft Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0339	0.0000	0.0339	5.1400e-003	0.0000	5.1400e-003			0.0000			0.0000
Off-Road	0.4223	4.0169	5.3698	0.0104		0.1849	0.1849		0.1701	0.1701		1,006.8249	1,006.8249	0.3256		1,014.9656
Total	**0.4223**	**4.0169**	**5.3698**	**0.0104**	**0.0339**	**0.1849**	**0.2188**	**5.1400e-003**	**0.1701**	**0.1752**		**1,006.8249**	**1,006.8249**	**0.3256**		**1,014.9656**

3.4 Shaft Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1015	6.8121	1.7654	0.0293	0.8752	0.0413	0.9165	0.2400	0.0395	0.2794		3,216.6875	3,216.6875	0.1767	0.5108	3,373.3294
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1703**	**6.8614**	**2.4315**	**0.0311**	**1.0988**	**0.0426**	**1.1414**	**0.2993**	**0.0407**	**0.3400**		**3,408.5329**	**3,408.5329**	**0.1818**	**0.5158**	**3,566.7718**

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					0.0132	0.0000	0.0132	2.0000e-003	0.0000	2.0000e-003			0.0000			0.0000
Off-Road	0.4223	4.0169	5.3698	0.0104		0.1849	0.1849		0.1701	0.1701	0.0000	1,006.8249	1,006.8249	0.3256		1,014.9656
Total	**0.4223**	**4.0169**	**5.3698**	**0.0104**	**0.0132**	**0.1849**	**0.1981**	**2.0000e-003**	**0.1701**	**0.1721**	**0.0000**	**1,006.8249**	**1,006.8249**	**0.3256**		**1,014.9656**

3.4 Shaft Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1015	6.8121	1.7654	0.0293	0.8752	0.0413	0.9165	0.2400	0.0395	0.2794		3,216.687 5	3,216.687 5	0.1767	0.5108	3,373.329 4
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1703**	**6.8614**	**2.4315**	**0.0311**	**1.0988**	**0.0426**	**1.1414**	**0.2993**	**0.0407**	**0.3400**		**3,408.532 9**	**3,408.532 9**	**0.1818**	**0.5158**	**3,566.771 8**

3.5 Install Casing & Trunk Line - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0081	9.3170	10.1680	0.0240		0.4196	0.4196		0.4044	0.4044		2,300.224 9	2,300.224 9	0.4402		2,311.230 8
Total	**1.0081**	**9.3170**	**10.1680**	**0.0240**		**0.4196**	**0.4196**		**0.4044**	**0.4044**		**2,300.224 9**	**2,300.224 9**	**0.4402**		**2,311.230 8**

3.5 Install Casing & Trunk Line - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0081	9.3170	10.1680	0.0240		0.4196	0.4196		0.4044	0.4044	0.0000	2,300.2249	2,300.2249	0.4402		2,311.2308
Total	**1.0081**	**9.3170**	**10.1680**	**0.0240**		**0.4196**	**0.4196**		**0.4044**	**0.4044**	**0.0000**	**2,300.2249**	**2,300.2249**	**0.4402**		**2,311.2308**

3.5 Install Casing & Trunk Line - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

3.6 Backfill Shafts - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Shafts - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.1112	4.0187	1.5337	0.0186	0.6405	0.0194	0.6600	0.1844	0.0186	0.2030		2,006.2030	2,006.2030	0.0668	0.2887	2,093.9110
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1800**	**4.0680**	**2.1999**	**0.0205**	**0.8641**	**0.0208**	**0.8849**	**0.2437**	**0.0198**	**0.2635**		**2,198.0484**	**2,198.0484**	**0.0719**	**0.2937**	**2,287.3535**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Shafts - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.1112	4.0187	1.5337	0.0186	0.6405	0.0194	0.6600	0.1844	0.0186	0.2030		2,006.2030	2,006.2030	0.0668	0.2887	2,093.9110
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1800**	**4.0680**	**2.1999**	**0.0205**	**0.8641**	**0.0208**	**0.8849**	**0.2437**	**0.0198**	**0.2635**		**2,198.0484**	**2,198.0484**	**0.0719**	**0.2937**	**2,287.3535**

3.7 Repave Roadway - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5828**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Roadway - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5828**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Roadway - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Unmitigated	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**		**6.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**		**6.0000e-005**

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

Roscoe Truck Line Replacement Project - Dist. Mainline

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.90	Acre	0.90	39,204.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume approximately 5 foot disturbance width for 7,600LF along Roscoe Blvd

Construction Phase - Demo = subsurface exploration & pavement removal
Site Prep = shoring piles
Grading = trench excavation
BC = pipeline install
trenching = backfill trench
paving = repave roadway

Off-road Equipment - Project Inventory
Other Material Handling Equipment = cement slurry pourer

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Trip Inventory

Demolition - Approx 250 CY per day = 300 tons/day

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	60.00
tblGrading	MaterialExported	0.00	120.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	15.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	6.00	8.00

tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	16.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00

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					
2023	0.9248	5.5079	7.9860	0.0189	1.5036	0.2480	1.5836	0.2789	0.2334	0.3541	0.0000	1,961.9003	1,961.9003	0.3459	0.1684	2,019.6119
Maximum	**0.9248**	**5.5079**	**7.9860**	**0.0189**	**1.5036**	**0.2480**	**1.5836**	**0.2789**	**0.2334**	**0.3541**	**0.0000**	**1,961.9003**	**1,961.9003**	**0.3459**	**0.1684**	**2,019.6119**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9248	5.5079	7.9860	0.0189	0.8509	0.2480	0.9309	0.1801	0.2334	0.3074	0.0000	1,961.9003	1,961.9003	0.3459	0.1684	2,019.6119
Maximum	**0.9248**	**5.5079**	**7.9860**	**0.0189**	**0.8509**	**0.2480**	**0.9309**	**0.1801**	**0.2334**	**0.3074**	**0.0000**	**1,961.9003**	**1,961.9003**	**0.3459**	**0.1684**	**2,019.6119**

	ROG	**NOx**	**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**	**43.41**	**0.00**	**41.22**	**35.43**	**0.00**	**13.19**	**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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Excavate Trench	Grading	10/11/2023	10/11/2023	5	1	
4	Install Pipeline	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Trench	Trenching	10/13/2023	10/13/2023	6	1	
6	Paving	Paving	10/14/2023	10/20/2023	6	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.9

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pavement Removal	Concrete/Industrial Saws	1	1.00	81	0.73
Pavement Removal	Excavators	1	2.00	158	0.38
Pavement Removal	Forklifts	1	2.00	89	0.20
Pavement Removal	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50

Shoring	Excavators	1	2.00	158	0.38
Shoring	Forklifts	1	4.00	89	0.20
Shoring	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Excavate Trench	Bore/Drill Rigs	1	2.00	221	0.50
Excavate Trench	Excavators	1	4.00	158	0.38
Excavate Trench	Forklifts	1	6.00	89	0.20
Excavate Trench	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Pipeline	Cranes	1	4.00	231	0.29
Install Pipeline	Forklifts	1	6.00	89	0.20
Install Pipeline	Generator Sets	1	4.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	7.00	130	0.42
Paving	Paving Equipment	1	7.00	132	0.36
Paving	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pavement Removal	4	20.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	20.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavate Trench	4	20.00	0.00	16.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	4	20.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	20.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	20.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.1524	1.3340	2.1156	3.2300e-003		0.0688	0.0688		0.0646	0.0646		311.5115	311.5115	0.0804		313.5224
Total	**0.1524**	**1.3340**	**2.1156**	**3.2300e-003**	**1.0700**	**0.0688**	**1.1387**	**0.1620**	**0.0646**	**0.2266**		**311.5115**	**311.5115**	**0.0804**		**313.5224**

3.2 Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0932**	**1.6842**	**1.0899**	**8.9000e-003**	**0.4336**	**0.0113**	**0.4449**	**0.1169**	**0.0107**	**0.1276**		**963.8503**	**963.8503**	**0.0475**	**0.1275**	**1,003.0415**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.1524	1.3340	2.1156	3.2300e-003		0.0688	0.0688		0.0646	0.0646	0.0000	311.5115	311.5115	0.0804		313.5224
Total	**0.1524**	**1.3340**	**2.1156**	**3.2300e-003**	**0.4173**	**0.0688**	**0.4860**	**0.0632**	**0.0646**	**0.1277**	**0.0000**	**311.5115**	**311.5115**	**0.0804**		**313.5224**

3.2 Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0932**	**1.6842**	**1.0899**	**8.9000e-003**	**0.4336**	**0.0113**	**0.4449**	**0.1169**	**0.0107**	**0.1276**		**963.8503**	**963.8503**	**0.0475**	**0.1275**	**1,003.0415**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7900e-003	0.0000	6.7900e-003	1.0300e-003	0.0000	1.0300e-003			0.0000			0.0000
Off-Road	0.2279	2.1447	3.0107	5.9800e-003		0.1030	0.1030		0.0948	0.0948		578.6809	578.6809	0.1872		583.3598
Total	**0.2279**	**2.1447**	**3.0107**	**5.9800e-003**	**6.7900e-003**	**0.1030**	**0.1098**	**1.0300e-003**	**0.0948**	**0.0958**		**578.6809**	**578.6809**	**0.1872**		**583.3598**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

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					2.6500e-003	0.0000	2.6500e-003	4.0000e-004	0.0000	4.0000e-004			0.0000			0.0000
Off-Road	0.2279	2.1447	3.0107	5.9800e-003		0.1030	0.1030		0.0948	0.0948	0.0000	578.6809	578.6809	0.1872		583.3598
Total	**0.2279**	**2.1447**	**3.0107**	**5.9800e-003**	**2.6500e-003**	**0.1030**	**0.1057**	**4.0000e-004**	**0.0948**	**0.0952**	**0.0000**	**578.6809**	**578.6809**	**0.1872**		**583.3598**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

3.4 Excavate Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0136	0.0000	0.0136	2.0500e-003	0.0000	2.0500e-003			0.0000			0.0000
Off-Road	0.3007	2.7718	4.1114	7.6500e-003		0.1368	0.1368		0.1259	0.1259		740.7150	740.7150	0.2396		746.7041
Total	**0.3007**	**2.7718**	**4.1114**	**7.6500e-003**	**0.0136**	**0.1368**	**0.1504**	**2.0500e-003**	**0.1259**	**0.1279**		**740.7150**	**740.7150**	**0.2396**		**746.7041**

3.4 Excavate Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.1799	0.5649	9.3700e-003	0.2801	0.0132	0.2933	0.0768	0.0126	0.0894		1,029.3400	1,029.3400	0.0566	0.1635	1,079.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1013**	**2.2292**	**1.2311**	**0.0112**	**0.5036**	**0.0146**	**0.5182**	**0.1361**	**0.0139**	**0.1500**		**1,221.1853**	**1,221.1853**	**0.0617**	**0.1684**	**1,272.9078**

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					5.2900e-003	0.0000	5.2900e-003	8.0000e-004	0.0000	8.0000e-004			0.0000			0.0000
Off-Road	0.3007	2.7718	4.1114	7.6500e-003		0.1368	0.1368		0.1259	0.1259	0.0000	740.7150	740.7150	0.2396		746.7041
Total	**0.3007**	**2.7718**	**4.1114**	**7.6500e-003**	**5.2900e-003**	**0.1368**	**0.1421**	**8.0000e-004**	**0.1259**	**0.1267**	**0.0000**	**740.7150**	**740.7150**	**0.2396**		**746.7041**

3.4 Excavate Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.1799	0.5649	9.3700e-003	0.2801	0.0132	0.2933	0.0768	0.0126	0.0894		1,029.3400	1,029.3400	0.0566	0.1635	1,079.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1013**	**2.2292**	**1.2311**	**0.0112**	**0.5036**	**0.0146**	**0.5182**	**0.1361**	**0.0139**	**0.1500**		**1,221.1853**	**1,221.1853**	**0.0617**	**0.1684**	**1,272.9078**

3.5 Install Pipeline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5191	5.1371	5.2840	9.6600e-003		0.2451	0.2451		0.2307	0.2307		928.1324	928.1324	0.2131		933.4606
Total	**0.5191**	**5.1371**	**5.2840**	**9.6600e-003**		**0.2451**	**0.2451**		**0.2307**	**0.2307**		**928.1324**	**928.1324**	**0.2131**		**933.4606**

3.5 Install Pipeline - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

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	0.5191	5.1371	5.2840	9.6600e-003		0.2451	0.2451		0.2307	0.2307	0.0000	928.1324	928.1324	0.2131		933.4606
Total	**0.5191**	**5.1371**	**5.2840**	**9.6600e-003**		**0.2451**	**0.2451**		**0.2307**	**0.2307**	**0.0000**	**928.1324**	**928.1324**	**0.2131**		**933.4606**

3.5 Install Pipeline - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

3.6 Backfill Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.906 4	1,058.906 4	0.3342		1,067.260 2
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.906 4**	**1,058.906 4**	**0.3342**		**1,067.260 2**

3.6 Backfill Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.3930					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8448**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.3930					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8448**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Unmitigated	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.9900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**		**2.1000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.9900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**		**2.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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

Roscoe Trunk Line Replacement Project - Regulating Stations

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2027
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Single Day Activity

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Inventory

Demolition -

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	50.00
tblGrading	MaterialExported	0.00	200.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	5.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00

tblTripsAndVMT	WorkerTripNumber	8.00	40.00

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					
2023	0.7554	9.0554	9.1123	0.0352	1.8671	0.2838	2.0090	0.3766	0.2689	0.5103	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**0.7554**	**9.0554**	**9.1123**	**0.0352**	**1.8671**	**0.2838**	**2.0090**	**0.3766**	**0.2689**	**0.5103**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

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					
2023	0.7554	9.0554	9.1123	0.0352	1.2145	0.2838	1.3602	0.3119	0.2689	0.5009	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**0.7554**	**9.0554**	**9.1123**	**0.0352**	**1.2145**	**0.2838**	**1.3602**	**0.3119**	**0.2689**	**0.5009**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	34.96	0.00	32.30	17.17	0.00	1.85	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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Road Stripping	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Excavate	Grading	10/11/2023	10/11/2023	5	1	
4	Install Vault & Valves	Building Construction	10/12/2023	10/12/2023	5	1	
5	Refill Pit	Trenching	10/13/2023	10/13/2023	5	1	
6	Repave Road	Paving	10/14/2023	10/14/2023	6	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.02

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Road Stripping	Concrete/Industrial Saws	1	2.00	81	0.73
Road Stripping	Excavators	1	4.00	158	0.38
Road Stripping	Forklifts	1	2.00	89	0.20
Road Stripping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50

Shoring	Cranes	1	4.00	231	0.29
Shoring	Excavators	1	4.00	158	0.38
Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Excavate	Cranes	1	2.00	231	0.29
Excavate	Excavators	1	6.00	158	0.38
Excavate	Forklifts	1	2.00	89	0.20
Excavate	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Vault & Valves	Cranes	1	4.00	231	0.29
Install Vault & Valves	Forklifts	1	6.00	89	0.20
Install Vault & Valves	Generator Sets	1	6.00	84	0.74
Install Vault & Valves	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Refill Pit	Cement and Mortar Mixers	1	6.00	9	0.56
Refill Pit	Excavators	1	6.00	158	0.38
Refill Pit	Other Material Handling Equipment	1	6.00	168	0.40
Refill Pit	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Road	Pavers	1	7.00	130	0.42
Repave Road	Paving Equipment	1	7.00	132	0.36
Repave Road	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Road Stripping	4	40.00	0.00	20.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavate	4	40.00	0.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Vault & Valves	4	40.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Refill Pit	4	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Road	3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Road Stripping - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.2791	2.4281	3.9451	6.0900e-003		0.1227	0.1227		0.1155	0.1155		586.0152	586.0152	0.1489		589.7379
Total	**0.2791**	**2.4281**	**3.9451**	**6.0900e-003**	**1.0700**	**0.1227**	**1.1927**	**0.1620**	**0.1155**	**0.2775**		**586.0152**	**586.0152**	**0.1489**		**589.7379**

3.2 Road Stripping - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0406	2.7249	0.7062	0.0117	0.3501	0.0165	0.3666	0.0960	0.0158	0.1118		1,286.6750	1,286.6750	0.0707	0.2043	1,349.3318
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1782**	**2.8235**	**2.0385**	**0.0155**	**0.7972**	**0.0192**	**0.8164**	**0.2146**	**0.0183**	**0.2328**		**1,670.3657**	**1,670.3657**	**0.0809**	**0.2142**	**1,736.2166**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.2791	2.4281	3.9451	6.0900e-003		0.1227	0.1227		0.1155	0.1155	0.0000	586.0152	586.0152	0.1489		589.7379
Total	**0.2791**	**2.4281**	**3.9451**	**6.0900e-003**	**0.4173**	**0.1227**	**0.5400**	**0.0632**	**0.1155**	**0.1786**	**0.0000**	**586.0152**	**586.0152**	**0.1489**		**589.7379**

3.2 Road Stripping - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0406	2.7249	0.7062	0.0117	0.3501	0.0165	0.3666	0.0960	0.0158	0.1118		1,286.675 0	1,286.675 0	0.0707	0.2043	1,349.331 8
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1782**	**2.8235**	**2.0385**	**0.0155**	**0.7972**	**0.0192**	**0.8164**	**0.2146**	**0.0183**	**0.2328**		**1,670.365 7**	**1,670.365 7**	**0.0809**	**0.2142**	**1,736.216 6**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.6500e-003	0.0000	5.6500e-003	8.6000e-004	0.0000	8.6000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.6500e-003**	**0.1530**	**0.1587**	**8.6000e-004**	**0.1408**	**0.1417**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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					2.2100e-003	0.0000	2.2100e-003	3.3000e-004	0.0000	3.3000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**2.2100e-003**	**0.1530**	**0.1552**	**3.3000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

3.4 Excavate - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0226	0.0000	0.0226	3.4200e-003	0.0000	3.4200e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549		777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0226**	**0.1684**	**0.1910**	**3.4200e-003**	**0.1549**	**0.1583**		**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Excavate - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.3500	2,573.3500	0.1414	0.4087	2,698.6635
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.0407**	**2,957.0407**	**0.1516**	**0.4185**	**3,085.5484**

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					8.8200e-003	0.0000	8.8200e-003	1.3400e-003	0.0000	1.3400e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549	0.0000	777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**8.8200e-003**	**0.1684**	**0.1772**	**1.3400e-003**	**0.1549**	**0.1562**	**0.0000**	**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Excavate - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.3500	2,573.3500	0.1414	0.4087	2,698.6635
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.0407**	**2,957.0407**	**0.1516**	**0.4185**	**3,085.5484**

3.5 Install Vault & Valves - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5955	5.8160	6.2013	0.0113		0.2772	0.2772		0.2627	0.2627		1,083.8910	1,083.8910	0.2200		1,089.3906
Total	**0.5955**	**5.8160**	**6.2013**	**0.0113**		**0.2772**	**0.2772**		**0.2627**	**0.2627**		**1,083.8910**	**1,083.8910**	**0.2200**		**1,089.3906**

3.5 Install Vault & Valves - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0222	0.8037	0.3068	3.7300e-003	0.1281	3.8800e-003	0.1320	0.0369	3.7100e-003	0.0406		401.2406	401.2406	0.0134	0.0577	418.7822
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1599**	**0.9024**	**1.6391**	**7.4800e-003**	**0.5752**	**6.5800e-003**	**0.5818**	**0.1555**	**6.1900e-003**	**0.1617**		**784.9313**	**784.9313**	**0.0236**	**0.0676**	**805.6671**

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	0.5955	5.8160	6.2013	0.0113		0.2772	0.2772		0.2627	0.2627	0.0000	1,083.8910	1,083.8910	0.2200		1,089.3906
Total	**0.5955**	**5.8160**	**6.2013**	**0.0113**		**0.2772**	**0.2772**		**0.2627**	**0.2627**	**0.0000**	**1,083.8910**	**1,083.8910**	**0.2200**		**1,089.3906**

3.5 Install Vault & Valves - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0222	0.8037	0.3068	3.7300e-003	0.1281	3.8800e-003	0.1320	0.0369	3.7100e-003	0.0406		401.2406	401.2406	0.0134	0.0577	418.7822
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1599**	**0.9024**	**1.6391**	**7.4800e-003**	**0.5752**	**6.5800e-003**	**0.5818**	**0.1555**	**6.1900e-003**	**0.1617**		**784.9313**	**784.9313**	**0.0236**	**0.0676**	**805.6671**

3.6 Refill Pit - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Refill Pit - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1821**	**1.7061**	**1.9458**	**0.0112**	**0.7033**	**0.0105**	**0.7138**	**0.1923**	**9.9100e-003**	**0.2023**		**1,186.1719**	**1,186.1719**	**0.0370**	**0.1254**	**1,224.4493**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Refill Pit - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1821**	**1.7061**	**1.9458**	**0.0112**	**0.7033**	**0.0105**	**0.7138**	**0.1923**	**9.9100e-003**	**0.2023**		**1,186.1719**	**1,186.1719**	**0.0370**	**0.1254**	**1,224.4493**

3.7 Repave Road - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5042**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Road - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5042**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Road - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.535658	0.065965	0.190922	0.126434	0.023737	0.006642	0.011305	0.008056	0.000938	0.000585	0.025742	0.000711	0.003305

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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 Technical Memorandum

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October 14, 2021

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Subject: Roscoe Trunk Line Replacement Project, Draft Biological Resources Technical Memorandum

1. INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to replace approximately 21,000 linear feet of the existing Roscoe Trunk Line (the Roscoe Trunk Line Replacement [RTLR] Project, also referred to herein as the project or proposed project). The RTLR would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from Mason Avenue on the west to Louise Avenue of the east, in the west San Fernando Valley area of the City of Los Angeles. The proposed project would also include approximately 18,000 linear feet of 16-inch diameter distribution mainline, approximately 2,300 linear feet of 12-inch diameter replacement distribution mainline, and two new regulating stations. All these proposed facilities would be located underground within the road right-of-way.

AECOM was retained by LADWP to prepare a biological resource assessment of the Roscoe Trunk Line Replacement Project in support of the California Environmental Quality Act (CEQA). In addition, LADWP is currently pursuing funding through the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (SRF) for the project. Per requirements of the SRF Environmental Package application, a biological resources assessment prepared in support of the project is required. Therefore, this memorandum has been prepared in accordance with CEQA and the requirements of the SRF application.

This memo summarizes the results of database searches and a site survey conducted by AECOM to document existing biological conditions within the project site, evaluate the presence and potential for special-status species and sensitive habitats to occur in the project area, and evaluate the need for any Best Management Practices (BMP) or mitigation measures to minimize and avoid potential impacts to biological resources.

2. PROJECT DESCRIPTION

2.1 Project Location and Setting

The proposed project would be located in the western San Fernando Valley of the City of Los Angeles (Figure 1). The replacement trunk line would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from approximately Mason Avenue on the west to Louise Avenue on the east, a distance of approximately 21,000 feet. Roscoe Boulevard (Figure 2). Roscoe Boulevard is classified as a Boulevard II roadway in the City of Los Angeles' Mobility Plan 2035, with a width of approximately 80 feet. It includes two vehicle travel lanes in each direction as well as a continuous center turning lane, which transitions into a left-turn lane at intersections. An additional parking lane is provided on each side of the street, but in the area of the project, parking is prohibited on weekdays between the hours of 4:00 PM and 7:00 PM on the north and south sides of the street and also between 7:00 AM and 9:00 AM on the south side of the street.

Uses along Roscoe consist of a mix of single-family and multi-family residential, retail and service commercial, and institutional uses, including schools and the Northridge Hospital Medical Center. While the majority of the project would be located within Roscoe Boulevard, one proposed underground regulating station would be located within Penfield Avenue just north of Roscoe Boulevard, and a proposed 12-inch diameter replacement distribution mainline would also be installed in Reseda Boulevard between Roscoe Boulevard and Bryant Street.

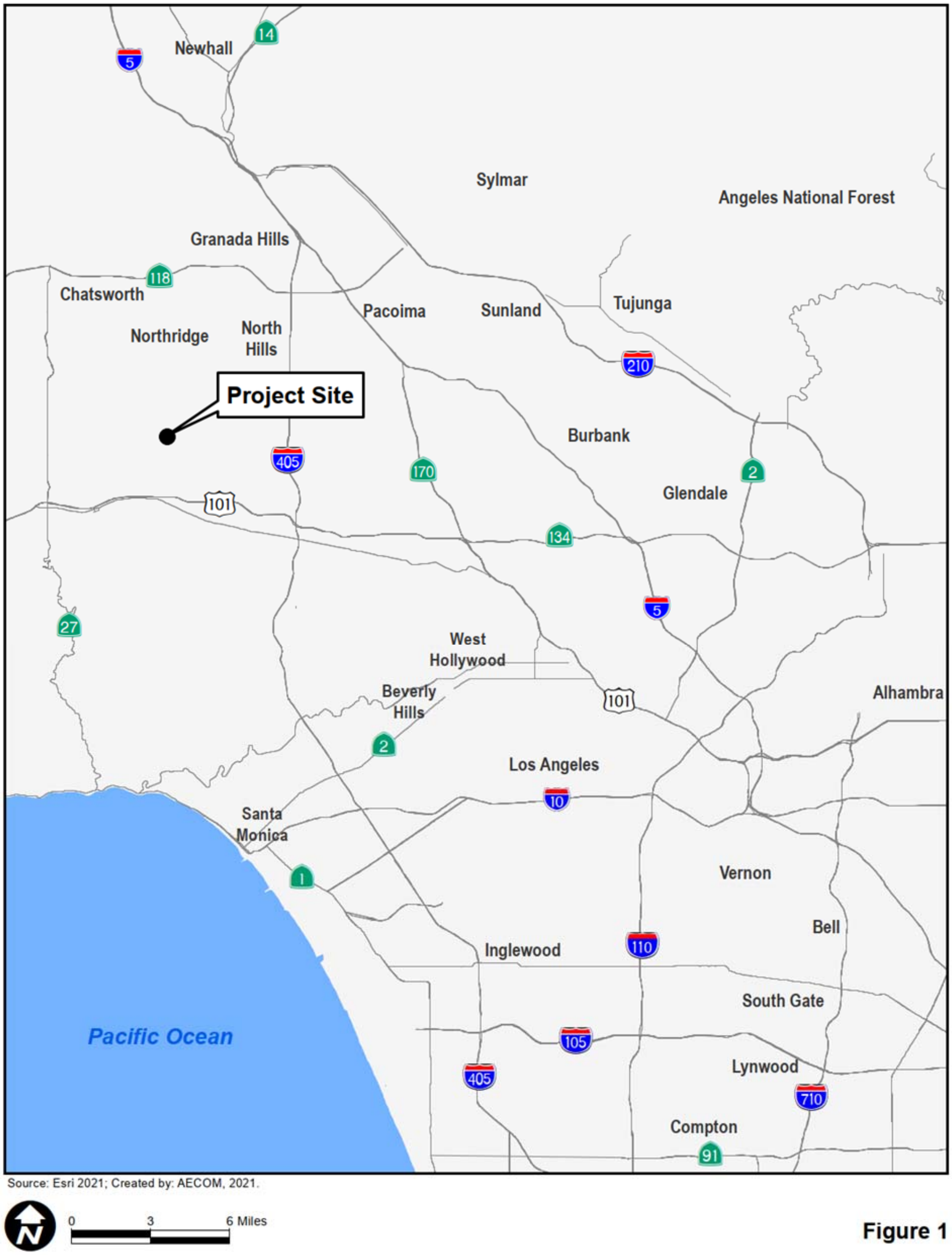

Figure 1

Regional Map

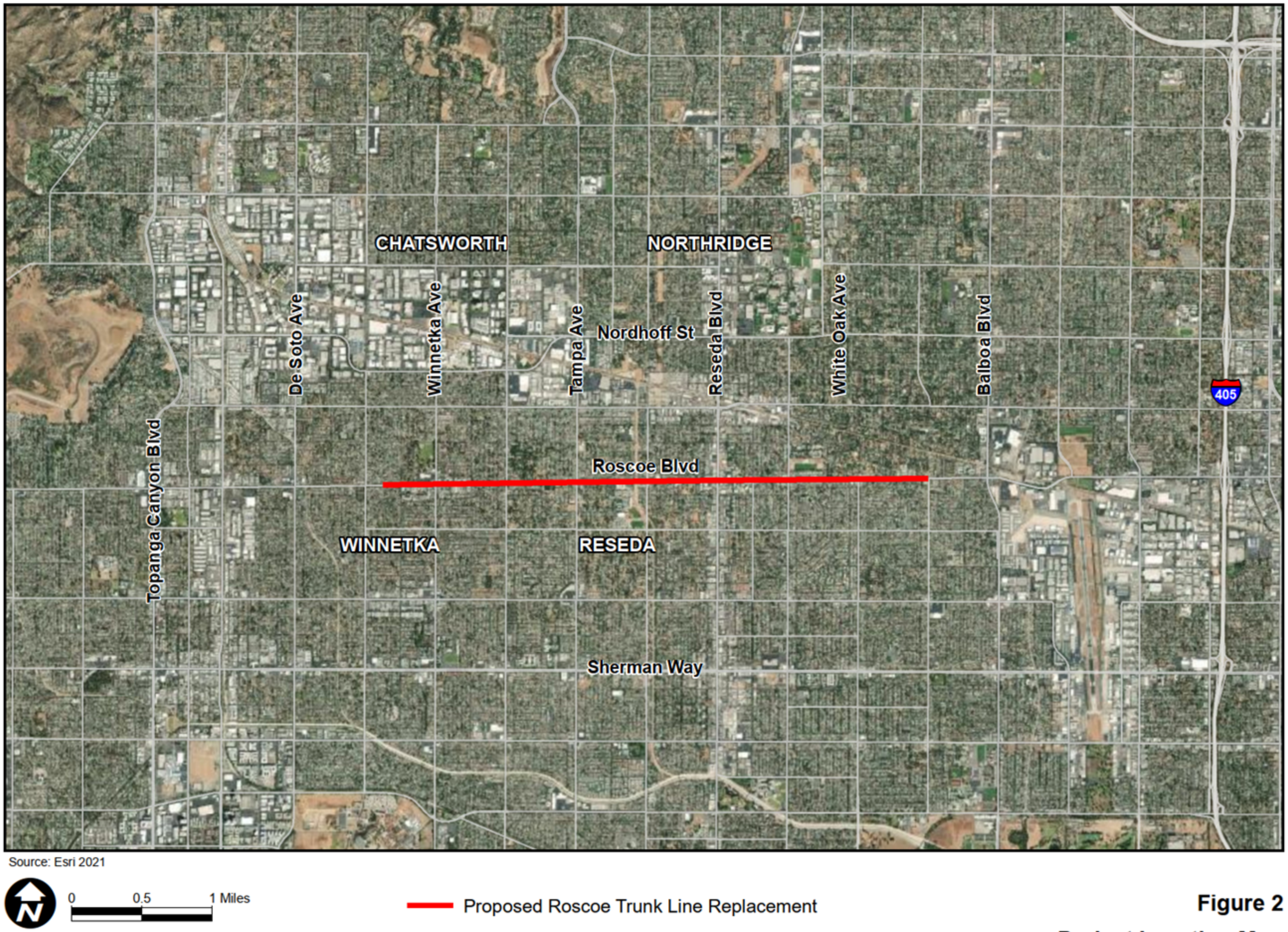

Figure 2

Project Location Map

2.2 Project Background

The original Roscoe Trunk Line, portions of which were installed in 1917 and portions in 1931, consisted of welded and riveted steel pipe ranging from 39 to 48 inches in diameter. It originally extended from Louise Avenue to the west end of the San Fernando Valley; however, the portion west of De Soto Avenue is no longer in service. The Roscoe Trunk Line is the primary source of potable water for the LADWP 947-foot service zone, which encompasses the majority of the communities of Reseda and Winnetka south of Roscoe Boulevard.

In 1998, due to the age and condition of the original trunk line, it was “slip-lined,” whereby a 34-inch diameter high-density polyethylene (HDPE) pipe was placed within the existing larger diameter steel pipe to carry the water supply. However, the HDPE line has experienced 15 leaks or breaks between 2004 and 2019, and the condition of the line compromises the reliability of water supply in the 947-foot service zone and also substantially increases long-term maintenance costs.

2.2 Project Objectives

The primary objective of the proposed project is to replace the existing HDPE Roscoe Trunk Line to increase and maintain the reliability and resilience of the potable water system supplying the 927-foot service zone. In addition, through direct interconnections with adjacent service zones, the RTLR would also improve system redundancy and thereby increase reliability and operational flexibility in other service zones in the west San Fernando Valley.

2.3 Proposed RTLR Components and Location

The primary component of the proposed project is a new underground 48-inch diameter trunk line, which would the replace the existing HDPE Roscoe Trunk Line. As previously discussed, the replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line and the 1,134-foot service zone at Louise Avenue. On the west, the RTRL would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement and the 1,123-foot service zone near Manson Avenue. Because the existing Roscoe Trunk Line must remain in service until the proposed replacement project is completed, the RTLR would be installed in an alignment parallel to, rather than actually removing and replacing, the existing trunk line.

Because the RTLR would interconnect directly to the 1,134-foot and 1,127-foot zones to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline, which would provide the direct service to the 947-foot zone currently provided by the existing Roscoe Trunk Line. The proposed 16-inch mainline would parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west. The 16-inch mainline would be connected to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones.

To reduce the operating pressure between the higher service zones with which the RTLR would interconnect (i.e., the 1,134-foot and 1,127-foot zones) and the 947-foot zone, the proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project. As is the case with the existing Roscoe & Louise Regulating Station, the two proposed regulating stations would be located entirely underground. They would be contained in underground vaults with interior dimensions of approximately 17 feet by 15 feet by 15 feet high. The Roscoe & Reseda Regulating Station would be located within the Roscoe Boulevard right-of-way, west of Reseda Boulevard. The Roscoe & Penfield Regulating Station would be located with the Penfield Avenue right-of-way, north of Roscoe Boulevard.

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street. This proposed 12-inch mainline would connect to the RTLR and replace an existing 8-inch mainline in the same alignment with larger-diameter pipe to extend the seismically resilient distribution network. In addition, 250 linear feet of 60-inch diameter WSP would be installed in Louise Avenue north of Roscoe Boulevard for connection to the future proposed Havenhurst Trunk Line replacement.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include pressure relief stations, valves, flow meters, and maintenance holes. All these facilities would be located underground within the road right-of-way.

After the RTLR is operational, the existing Roscoe Trunk Line would be isolated from the drinking water system and abandoned in place. Since the RTLR would connect directly to the De Soto Trunk Line Replacement near Mason Avenue, the existing underground De Soto & Roscoe Regulator Station, which connects the existing Roscoe Trunk Line to the De Soto Trunk Line, would also be abandoned in place.

2.4 Construction Schedule

Construction for the proposed project is preliminarily scheduled to begin in mid-2024 and would take approximately 7 years to complete. In order to achieve this schedule, various sections of the project would be under construction concurrently in different locations within the project limits.

2.5 Construction Process

The majority of the RTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline sections, both for the trunk line and distribution mainline, are placed in the trench, the trench is backfilled, and the road is repaved. In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which construction activities could proceed unimpeded. Preliminarily, these work zones would generally range between approximately 800 and 1,200 feet in length and approximately 36 feet in width.

A trench approximately 12 feet wide and normally 10 feet deep would be excavated. This depth of trench would accommodate the 48-inch diameter trunk line, bedding material under the trunk line, and the minimum 5 feet of cover required over the line. However, in limited areas, to avoid relocating existing substructures, such as water, storm, or sanitary sewer lines crossing the RTLR alignment, the trench may need to be up to 20 feet deep.

After a sufficient length of trench is excavated, a pipe segment would be placed in the trench by a crane and joined to the preceding pipe segment. Once the pipe joint is complete, cement slurry bedding material would be placed under the newly installed pipe segment to secure its position. Approximately two pipe segments, which are nominally 20 feet in length, could be installed in a day. However, as this installation is occurring, the work on the succeeding sections of the pipeline alignment would be initiated, beginning with the excavation of the trench and placement of shoring. In this manner, the work associated with adjacent sections of the pipeline installation could overlap by a few days.

Once approximately 200 feet of pipeline have been installed the trench would be partially backfilled with a cement slurry. The cement slurry would be delivered by concrete trucks. The trunk line would require a minimum of 5 feet of cover, which would be achieved with a trench depth of approximately 10 feet. The 16-inch mainline, which requires only a minimum of 3 feet of cover, would then be installed within the partially backfilled trench, and the trench would then be backfilled to below the top of pavement. When approximately 600 feet of trench has been completely backfilled, the trench would then be repaved.

Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 8 to 12 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

Microtunneling

While the majority of the RTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling construction method would be employed to install the trunk line. This would apply to areas where large substructures that cannot be readily relocated would preclude the excavation of a trench the depth and width required for the RTLR. These structures include major sewer, storm, natural gas, or water lines or other structures, including Aliso Creek, a large concrete-lined flood control channel that crosses beneath Roscoe Boulevard. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system. The new trunk line would then be placed within the casing pipe.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 40 feet. To accommodate the tunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching shafts would be approximately 20 feet wide and 50 feet long. The receiving shafts would be approximately 20 feet wide and 30 feet long, large enough to receive the tunnel boring machine and allow it to be retrieved from the shaft.

The pipe casing would be installed in the tunnel at an average rate of about two to three segments per day, and the trunk line pipe segments would be installed at a similar rate. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 900 feet to over 3,500 feet in total length. However, the entire microtunneling operation at a given shaft location would be expected to range from approximately 8 months to 10 months.

Regulating Stations

As mentioned above, two new regulating stations would be constructed as part of the proposed project. One would be located within Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station), and the other would be located within Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station). Although the dimensions of the two regulating station vaults would vary based on exact requirements, they would nominally require a pit approximately 25 feet deep, 20 feet wide, and 23 feet long to accommodate the vault set on base material as well as the space required to connect the pipe legs from the RTLR. The construction of each regulating station would take approximately 4 to 6months to complete.

2.6 Project Operations

The RTLR would interconnect the 1,123-foot service zone at the west end and the 1,134-foot service zone at the east end, allowing flow between the two zones, providing operational flexibility and system redundancy. The 947-foot zone would be supplied by the RTLR via Roscoe & Louise, Roscoe & Reseda, and Roscoe & Penfield regulating stations connection to the new 16-inch mainline. The RTLR would not require any additional supplies to the City's drinking water system. The RTLR would be located entirely underground. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair.

2.7 Best Management Practices

The following best management practices (BMPs) would be employed during construction of the proposed project, to help minimize or eliminate potential impacts to the environment. BMPs are distinguished from mitigation measures because they are based on existing regulatory requirements and/or are standard practices and procedures of LADWP and/or its contractors not unique to the proposed project.

- The proposed project would implement Rule 403 dust control measures required by the South Coast Air Quality Management District (SCAQMD), which would include the following:
    - Water shall be applied to exposed surfaces at least two times per day to prevent generation of dust plumes.

- The construction contractor shall utilize at least one of the following measures at each vehicle egress from the project site to a paved public road:

  a. Pave the surface extending at least 100 feet and at least 20 feet wide;
  b. Utilize a wheel shaker/wheel spreading device consisting of raised dividers at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages; or
  c. Install a wheel washing system to remove bulk material from tires and vehicle undercarriages.

- All trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions).
- Construction activity on exposed or unpaved dirt surfaces shall be suspended when wind speed exceeds 25 miles per hour (mph).
- A community liaison shall be identified concerning on-site construction activity including resolution of issues related to dust generation.
- Non-toxic soil stabilizers shall be applied according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more).
- Streets shall be swept at the end of the day if visible soil is carried onto adjacent public paved roads. If feasible, water sweepers with reclaimed water shall be used.

- A Storm Water Pollution Prevention Plan (SWPPP), which will include erosion and sedimentation BMPs, shall be developed and implemented for construction activities. The SWPPP may include, but would not be limited to, the following:
  - Minimizing the extent of disturbed areas and duration of exposure;
  - Stabilizing and protecting disturbed areas;
  - Keeping runoff velocities low; and
  - Retaining sediment within the construction area.
- Construction erosion control BMPs may include the following:
  - Temporary desilting basins;
  - Silt fences;
  - Gravel bag barriers;
  - Temporary soil stabilization with mattresses and mulching;
  - Temporary drainage inlet protection; and
  - Diversion dikes and interceptor swales.
- Migratory Bird Treaty Act

  Since project construction activities would be continuous during the 7-year construction period, nesting bird season (which generally occurs February 1 through September 1, and as early as January for raptors) could not be avoided. Therefore, the following BMP shall be employed to avoid and minimize impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC):

1. A pre-construction nesting bird survey shall be conducted by a qualified biologist within 3 days prior to the start of construction activities to determine whether active nests are present within or directly adjacent to the construction zone. All nests found shall be recorded.

2. In the event an active nest is detected, a qualified biologist shall monitor the nest to determine if a nest avoidance buffer zone is necessary to restrict construction activities in proximity to the nest to protect the nest from failing. Any buffer zone, within which construction activities may not occur, shall be established in coordination with the qualified biologist, who shall take into account existing baseline conditions (e.g., topography, buffering buildings or other structures, etc.). In addition, observed avian response to ambient conditions (e.g. existing traffic noise and human activity) shall factor into the requirement for and size of a nest avoidance buffer.

3. The qualified biologist shall monitor all active nests, including those with and without an established buffer, at least once per week to determine whether birds are being disturbed. If signs of disturbance or stress are observed, the qualified biologist shall implement adaptive measures to reduce disturbance. These measures could include establishing or increasing buffer distances, or placing visual screens or sound dampening structures between the nest and construction activity until fledging is confirmed. The qualified biologist shall monitor each active nest until they determine that nestlings have fledged and dispersed, or the nest is no longer active.

4. Should an active nest of any federal or state-listed bird species be detected during pre-construction surveys or subsequent construction monitoring, construction activity in the immediate area shall not commence or shall cease if already underway, and the applicable federal and/or state agency (USFWS, CDFW) shall be notified. Work in other areas of the project site may continue until the active nests has been evaluated.

3. METHODS FOR ASSESSING BIOLOGICAL RESOURCES

A search of relevant regional databases for special-status biological resources in the vicinity of the project area was conducted prior to conducting a field survey. The project runs east-west along Roscoe Boulevard and occurs entirely within the northwestern portion of the U.S. Geological Survey's Canoga Park quadrangle. A search of this quad and the surrounding eight quadrangles, including Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills was made of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and of the California Native Plant Society's (CNPS) on-line Inventory of Rare and Endangered Plants of California. Additionally, the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) (USFWS 2021) database was queried for special-status species, sensitive natural communities, and protected areas known from the project vicinity.

The project area evaluated for biological resources included the proposed pipeline alignments and regulating stations, which would be entirely within paved public streets, plus a 500-foot survey buffer around the alignments and regulating stations, combined the Biological Survey Area (BSA) (see Figure 2). A buffer around the project alignment was evaluated in order to capture potential indirect effects to biological resources from implementation of the project. Indirect effects could include elevated noise and dust levels, soil compaction, and increased human activity within the BSA. A 500-foot survey buffer is standard for capturing potential indirect impacts from a project on biological resources. It is anticipated that indirect impacts beyond 500 feet would be diffuse and would not significantly impact biological resources, especially because of the urban nature of the surrounding area.

Prior to conducting a field survey, aerial imagery of the BSA was reviewed for the presence of habitats that could potentially support special-status biological resources. Since most of the BSA is developed by hardscape features (i.e. roadways and buildings), the desktop review focused on identifying any significant green or otherwise open spaces that could provide suitable habitat. On June 9, 2021, a field survey of the BSA was conducted by AECOM biologists Art Popp and Brianna Quirarte to document existing biological resources that occur or have the potential to occur within and adjacent to the BSA, and to evaluate the potential for special-status plant and wildlife species to occur within the BSA. Binoculars were utilized to scan for evidence of wildlife activity in the BSA. The entire project alignment was surveyed. Seasonal, species-specific botanical and wildlife surveys were not conducted as part of this evaluation; however, based on the field survey conducted and an assessment of conditions in the BSA, it is apparent that special-status plant and wildlife species are not anticipated to occur within the urbanized area the project is located in.

4. EXISTING CONDITIONS

The entire BSA is urbanized or has otherwise been previously disturbed, primarily by residential development, with some areas of commercial development. Photographs depicting conditions within the BSA are provided in Attachment B. No open spaces, parks, or similar areas occur within the BSA. Vegetation within the BSA consists primarily of plantings of non-native ornamental trees and shrubs and areas of lawn associated with residential landscapes. The truck line alignment is transected by Aliso Canyon Wash near Wilbur Avenue, flowing north to south within a concrete channel under Roscoe Boulevard. Elevation along the alignment of the proposed truck line range from approximately 790 feet above mean sea level (amsl) at Louise Avenue to 830 feet amsl near Mason Avenue.

4.1 Vegetation Communities and Plants

Vegetation communities are assemblages of plant species that commonly coexist. The classification of vegetation communities is based on the life form of the dominant species within that community and the associated species. No native plant communities occur within or adjacent to the BSA. Non-native ornamental species and occasional native species common to residential and commercial properties within the City occur within the BSA.

Common ornamental trees observed within the BSA are included in the Table 1 below.

Table 1. List of Common Tree Species Observed During Field Survey	
DICOTS (Woody and Herbaceous Plant Species)	
Scientific Name	**Common Name**
ANACARDIACEAE	**SUMAC FAMILY**
Pistacia chinensis	Chinese pistache
Schinus terebinthifolius	Brazilian peppertree
BIGNONIACEAE	**BIGNONIA FAMILY**
Jacaranda mimosifolia	jacaranda
CUPRESSACEAE	**CYPRESS FAMILY**
Cupressus sempervirens	Italian cypress
LYTHRACEAE	**LOOSESTRIFE FAMILY**
Lagerstroemia indica	crapemyrtle
MYRTACEAE	**MYRTLE FAMILY**
Callistemon citrinus	red bottlebrush
OLEACEAE	**OLIVE FAMILY**
Fraxinus uhdei	shamel ash
Ligustrum lucidum	glossy privet
Olea europaea	olive
PINACEAE	**PINE FAMILY**
Pinus pinea	Italian stone pine
PLATANACEAE	**SYCAMORE FAMILY**
Platanus racemosa	western sycamore
SAPINDACEAE	**SOAPBERRY FAMILY**
Cupaniopsis anacardioides	carrotwood
ULMACEAE	**ELM FAMILY**
Ulmus parvifolia	Chinese elm
MONOCOTS (Grasses and Grass-like Plant Species)	
Scientific Name	**Common Name**
ARECACEAE	**PALM FAMILY**
Pheonix canariensis	Canary Island date palm
Washingtonia robusta	Mexican fan palm

One special-status plant species, southern California black walnut (*Juglans californica*) was noted within the BSA during the field survey and is discussed further in Section 5.1 below.

4.2 Wildlife

Wildlife species observed during the field survey of the project and surrounding areas included species that are common in and adapted to urban environments. Common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), rock dove (*Columba livia*), Northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), house finch (*Haemorhous mexicanus*), red-tailed hawk (*Buteo jamaicensis*), hummingbird (*sp.*) and gull (*Larus sp.*) were observed in the BSA.

No special-status wildlife species were observed during the field survey, as discussed further in Section 5.2 below.

4.3 Wildlife Corridor

In an urban context, a wildlife migration corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two comparatively undisturbed habitat fragments, or between a habitat fragment and some vital resource that encourages population growth and diversity. Habitat fragments are isolated patches of habitat separated by otherwise foreign or inhospitable areas, such as urban tracts or highways. Two types of wildlife migration corridors seen in urban settings are regional corridors, defined as those linking two or more large areas of natural open space, and local corridors, defined as those allowing resident wildlife to access critical resources (food, cover, and water) in a smaller area that might otherwise be isolated by urban development.

The project is aligned through a completely urbanized area of the San Fernando Valley. The BSA does not occur within or intersect a recognized/established regional wildlife corridor; however, the proposed alignment intersects Aliso Canyon Wash. This channel may provide opportunities for localized wildlife movement within the urbanized San Fernando Valley. Additionally, the channel extends north into undeveloped areas of the Santa Susanna Mountains, potentially providing a corridor from the urbanized San Fernando Valley into green/open space areas that may provide more suitable opportunities for wildlife. However, fencing along the channel restricts wildlife access and the concrete-encased nature of the channel provides little cover, resting, foraging, or nesting opportunities for wildlife, limiting the channel's suitability to serve as a significant wildlife corridor.

Ornamental trees within and adjacent to the BSA provide some opportunities for cover, resting, foraging, and nesting to localized bird populations; however, they do not provide functions as a significant wildlife movement corridor.

5. SPECIAL-STATUS SPECIES

5.1 Special-Status Plant Species

Special-status plant species include those listed as Endangered, Threatened, Rare or those species proposed for listing by the US Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (FESA), those listed by CDFW under the California Endangered Species Act (CESA), and the CNPS.[1,2,3] The CNPS inventory is sanctioned by the CDFW and essentially serves as the list of candidate plant species for state listing. CNPS's

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[1] Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Title 50 Code of Federal Regulations [CFR] 17.12 [listed plants], Title 50 CFR 17.11 [listed animals] and includes notices in the Federal Register for proposed species).

[2] Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (Title 14 California Code of Regulations 670.5).

[3] Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq*.).

California Rare Plant Ranks (CRPR) 1B and 2 species are considered eligible for state listing as endangered or threatened.

A total of 60 plant species were identified from the CNDDB[4] and CNPS[5] database searches to have historically been recorded from the Canoga Park and surrounding eight quadrangles (a land area of nearly 100 square miles), and from a search of IPaC[6] for the Project vicinity, including the 16 federal and/or State-listed species below:

- marsh sandwort (*Arenaria paludicola*; federally and State-listed Endangered)
- Braunton's milk-vetch (*Astragalus brauntonii*; federally-listed Endangered)
- Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*; federally and State-listed Endangered)
- coastal dunes milk-vetch (*Astragalus tener var. titi*; federally and State-listed Endangered)
- Nevin's barberry (*Berberis nevinii*; federally and State-listed Endangered)
- salt marsh bird's-beak (*Chloropyron maritimum ssp. maritimum*; federally and State-listed Endangered)
- San Fernando Valley spineflower (*Chorizanthe parryi var. fernandina*; State-listed Endangered)
- Santa Susana tarplant (*Deinandra minthornii*; State Rare)
- beach spectaclepod (*Dithyrea maritima*; State-listed Threatened)
- slender-horned spineflower (*Dodecahema leptoceras*; federally and State-listed Endangered)
- marcescent dudleya (*Dudleya cymose ssp. marcescens*; federally-listed Threatened and State Rare)
- Santa Monica dudleya (*Dudleya cymose ssp. ovatifolia*; federally-listed Threatened)
- spreading navarretia (*Navarretia fossalis* federally-listed Threatened)
- California Orcutt grass (*Orcuttia californica*; federally and State-listed Endangered)
- Lyon's pentachaeta (*Pentachaeta lyonia*; federally and State-listed Endangered)
- Gambel's watercress (*Rorippa gambellii*; federally-listed Endangered)

The 60 special-status plant species identified during the database reviews, their status, and habitat requirements are provided in Table A, Attachment C.

No naturally-occurring special-status plant species were observed in the BSA during the field survey, and no records of special-status plant species coincide with the BSA. Several occurrences of southern California black walnut (CRPR List 4.2) were observed in the BSA, mostly on private residential properties and outside the public right-of-way, or on side streets off the project alignment, where they would not be impacted during project implementation.

Mature southern California walnut trees are also protected under the City of Los Angeles Native Tree Protection Ordinance (described in Section 7.3 below), as are western sycamore

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4 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

5 California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants (online edition, v9-01 0.0). Available at: http://www.rareplants.cnps.org/. Accessed June 4, 2021.

trees (*Platanus racemosa*) which were also identified in the BSA. Individuals of these species all occur on private residential properties and outside the public right-of-way or on side streets off the project alignment where they will not be impacted.

No USFWS-designated Critical Habitat for any special-status plant species coincides with the BSA.

5.2 Special-Status Wildlife Species

Special-status wildlife species include those listed by USFWS under FESA and by CDFW under CESA. USFWS and CDFW officially list species as either threatened, endangered, or as candidates for listing. Additional species receive federal protection under the Bald Eagle Protection Act (e.g., bald eagle, golden eagle), the MBTA, and state protection under CEQA Section 15380(d).

All birds, except European starlings, English house sparrows, rock doves (pigeons), and non-migratory game birds such as quail, pheasant, and grouse are protected under the MBTA. However, non-migratory game birds are protected under CFGC Section 3503. Many other species are considered by CDFW to be California Species of Special Concern (SSC) and others are on a CDFW Watch List (WL). The CNDDB tracks species within California for which there is conservation concern, including many that are not formally listed, and assigns them a CNDDB Rank.[6] Although CDFW SSC and WL species and species that are tracked by the CNDDB but not formally listed are afforded no official legal status, they may receive special consideration during the environmental review process. CDFW further classifies some species as "Fully Protected" (FP), indicating that the species may not be taken or possessed except for scientific purposes, under special permit from CDFW. Additionally, CFGC Sections 3503, 3505, and 3800 prohibit the take, destruction, or possession of any bird, nest, or egg of any bird except English house sparrows and European starlings unless authorization is obtained from CDFW.

A total of 55 wildlife species were identified from the CNDDB[7] search of the Canoga Park and surrounding eight quadrangles and from a search of IPaC[8] for the project vicinity, including the 19 federal and/or State-listed wildlife species below:

- tricolored blackbird (*Agelaius tricolor*; State-listed Threatened)
- Swainson’s hawk (*Buteo swainsoni*; State-listed Threatened)
- western yellow-billed cuckoo (*Coccyzus americanus occidentalis*; federally-listed Threatened and State-listed Endangered)
- southwestern willow flycatcher (*Empidonax traillii extimus*; federally and State-listed Endangered)
- California condor (*Gymnogyps californianus*; federally and State-listed Endangered)

[6] California Department of Fish and Wildlife. 2021. California Natural Diversity Database (CNDDB). Special Animals List. July.

[7] California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

[8] Information for Planning and Consultation. 2021. U.S. Fish and Wildlife Service. Available at: https://ecos.fws.gov/ipac/. Accessed June 4, 2021.

- coastal California gnatcatcher (*Polioptila californica californica*; federally-listed Threatened)
- bank swallow (*Riparia riparia*; State-listed Threatened)
- least Bell's vireo (*Vireo bellii pusillus*; federally and State-listed Endangered)
- arroyo toad (*Anaxyrus californicus*; federally-listed Endangered)
- California red-legged frog (*Rana draytonii*; federally-listed Threatened)
- southern mountain yellow-legged frog (*R. muscosa*; federally and State-listed Endangered)
- Santa Ana sucker (*Catostomus santaanae*; federally-listed Threatened)
- steelhead- Southern California DPS (*Oncorhynchus mykiss irideus pop.* 10; federally-listed Endangered)
- tidewater goby (*Eucyclogobius newberryi*; federally-listed Endangered)
- Crotch bumble bee (*Bombus crotchii*; Candidate for State listing as Endangered)
- monarch- California overwintering population (*Danaus plexippus pop.* 1; Candidate for federal listing)
- quino checkerspot butterfly (*Euphydrus editha quino*; federally-listed Endangered)
- Riverside fairy shrimp (*Streptocephalus woottoni* federally-listed Endangered)
- vernal pool fairy shrimp (*Branchinecta lynchi*; federally-listed Threatened)

The 55 special-status wildlife species identified during the database reviews, their status, and habitat requirements are provided in Table B, Attachment C.

A CNNDB record of one special-status wildlife species, Crotch bumble bee (*Bombus crotchii*), a Candidate for listing as Endangered under the California Endangered Species Act, coincides with the BSA. The record is from an observation in 1964 and is described as occurring within the community of Northridge. Suitable habitat for this species is absent from the BSA, and this species is not expected to occur within the BSA (see Table B, Attachment C).

No USFWS-designated Critical Habitat for any special-status wildlife species coincides with the BSA.

6. SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are designated as rare in the region by the CNDDB, support special-status plant or wildlife species, or receive regulatory protection (i.e., Section 404 of the Clean Water Act (CWA) and/or Sections 1600 et seq. of the CFGC). Rare communities are given the highest inventory priority.[9,10] Based on a review of the CNDDB,[11] 13 sensitive vegetative communities have been recorded within the Canoga Park and surrounding eight quadrangles, including California Walnut Woodland, Cismontane

9 Holland, R., *Preliminary Descriptions of the Terrestrial Natural Communities of California*. California Department of Fish and Game, The Resources Agency. 156 pp. 1986.

10 California Department of Fish and Wildlife, 2010. List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base. Natural Heritage Division. The Resources Agency. September.

11 California Department of Fish and Wildlife. *California Natural Diversity Data Base (CNDDB).* Full condensed report for the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles. Generated June 4, 2021.

Alkali Marsh, Riversidean Alluvial Fan Sage Scrub, Southern California Coastal Lagoon, Southern California Steelhead Stream, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, Valley Needlegrass Grassland, and Valley Oak Woodland. These communities are generally documented in the CNDDB two miles plus to the north and northeast of the BSA.

No sensitive natural communities occur within the BSA. Vegetation consists primarily of non-native ornamental trees and shrubs that are common in urban environments. However, aquatic communities (i.e. wetlands or other waters) under regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB) do coincide with the BSA, in the form of Aliso Canyon Wash, which occurs as a concrete-encased channel through the BSA.

7. APPLICABLE REGULATIONS

7.1 Federal Regulations and Standards

Federal Endangered Species Act (ESA)

Enacted in 1973, the federal ESA provides for the conservation of threatened and endangered species and their ecosystems (United States Code [U.S.C.] Title 16, Chapter 35, Sections 1531–1544). The ESA prohibits the “take” of threatened and endangered species except under certain circumstances and only with authorization from USFWS through a permit under Section 4(d), 7 or 10(a) of the ESA. “Take” under the ESA is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

Formal consultation under the ESA would be required if the project had the potential to affect a federally-listed species that has been detected within or adjacent to the BSA. No federally-listed species were detected during the field survey and suitable habitats for such species do not occur in the BSA, or the species’ known distribution does not coincide with the BSA. Therefore, formal consultation is not anticipated.

Migratory Bird Treaty Act

Congress passed the MBTA in 1918 to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA (U.S.C. Title 16, Chapter 7, Subchapter II, Sections 703–712). The prohibition applies to birds included in the respective international conventions between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and Russia.

No permit is issued under the MBTA; however, the project would remain in compliance with the MBTA by conducting pre-construction nesting bird surveys, and, if needed, providing a qualified biologist to monitor active nests occurring in the BSA to ensure construction does not affect species protected under the MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (the Eagle Act) amended in 1962, was originally implemented for the protection of bald eagles. In 1962, Congress amended the Eagle Act to also cover golden eagles, a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. This act makes it illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof.

Bald and golden eagles are not known from the project area and habitat in the BSA is not suitable for these species. As a result, the project would not be expected to take bald or golden eagle.

Clean Water Act

Under Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S., which include those waters listed in 33 CFR 328.3 (Definitions) (U.S.C. Title 33, Chapter 26, Sections 101–607). Section 401 of the CWA requires a water quality certification from the state for all permits issued by USACE under Section 404 of the CWA. RWQCB is the state agency in charge of issuing a CWA Section 401 water quality certification or waiver.

The alignment of the truck line intersects Aliso Canyon Wash; however, the project would microtunnel the truck line and the distribution line beneath the channel (detailed in Section 2.5 above) and no project work would occur in or impact the channel. As a result, a permit from the USACE authorizing impacts to Aliso Canyon Wash is not anticipated.

Magnuson-Stevens Fishery Conservation and Management Act

Under the purview of the National Oceanic and Atmospheric Association's National Marine Fisheries Service (NMFS), amendments in 1996 to the Magnuson-Stevens Fishery Conservation and Management Act set forth a number of mandates for NMFS, Regional Fishery Management Councils, and federal action agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NMFS, are required to delineate Essential Fish Habitat (EFH) in fishery management plans for all managed species. EFH is defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include historic areas if appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (from the 1997 Interim Final Rule [62 Fed. Reg. 66551, Section 600.10 Definitions]).

The BSA is located within the urbanized San Fernando Valley region of the City and does not include EFH.

Protection of Wetlands – Executive Order Numbers 11990 and 12608

Under this Executive Order (EO) issued May 24, 1977 and amended by EO 12608, Federal agencies must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands (42 CFR 26961; 3 CFR 1977 Comp., p. 121). Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding, the head of the agency may take into account economic, environmental and other pertinent factors. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.[12]

Wetlands, as defined below under this EO, do not occur within the BSA and as a result would not be affected by the project.

> "…areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds."

Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

An online review of designated Wild and Scenic Rivers[13] was conducted and it was determined that the BSA is not located within the watershed of a wild or scenic river.

Coastal Zone Management Act

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act in 1972 (Public Law 109-58; 16 U.S.C. 1451 et seq.). This act, administered by NOAA, provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve,

[12] FedCenter.gov. 2017. Executive Order 11990. Protection of Wetlands. Available at: https://www.fedcenter.gov/Bookmarks/index.cfm?id=585

[13] National Wild and Scenic Rivers System. 2021. Wild and Scenic Rivers. Explore Designated Rivers. Available at: https://www.rivers.gov/map.php. Accessed August 27, 2021.

protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The BSA is located within the urbanized San Fernando Valley region of the City and is not located in the City's Coastal Zone or the State Coastal Zone.

7.2 State Regulations and Standards

California Fish and Game Code

CFGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act (CESA) (Sections 2050–2115) and Lake and Streambed Alteration Agreement (LSAA) regulations (Section 1600 et seq.).

Wildlife "take" is defined by CDFW as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Protection extends to the animals, dead or alive, and all their body parts. Section 2081 of CESA allows CDFW to issue an incidental take permit for state-listed threatened or endangered species, should the proposed project have the potential to "take" a state-listed species that has been detected within or adjacent to the project. Certain criteria are required under CESA prior to the issuance of such a permit, including the requirement that impacts of the take are minimized and fully mitigated.

No state-listed species were detected during the field survey and suitable habitats for such species does not occur in the BSA, or the species' known distribution does not coincide with the BSA. As a result, a permit under Section 2081 is not anticipated for the project.

Aliso Canyon Wash constitutes a potentially regulated water feature under the jurisdiction of CDFW; however, the project would pipe jack the truck line beneath the channel and no project work would occur in or impact the channel. As a result, coordination with CDFW and the issuance of an LSAA is not anticipated for this project.

Porter-Cologne Water Quality Control Act

Under Section 13000 et seq., of the Porter-Cologne Act, RWQCB is the agency that regulates discharges of waste and fill material within any region that could affect a water of the state (California Water Code [CWC] 13260[a]), (including wetlands and isolated waters) as defined by CWC Section 13050(e).

Aliso Canyon Wash constitutes a potentially-regulated water feature of the State under the jurisdiction of the RWQCB; however, the project would pipe jack the truck line beneath the channel and no project work would occur in or impact the channel. As a result, coordination with the RWQCB and the issuance of a permit under Porter-Cologne is not anticipated for the project.

California Environmental Quality Act[14]

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes an "adverse effect" on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact. This technical memo has been prepared for project compliance with CEQA.

7.3 Local Regulations and Standards

Significant Ecological Area Program

Los Angeles County first began to inventory biotic resources and identify important areas of biological diversity in the 1970s. Today, the primary mechanism used by the County to conserve biological diversity is a planning overlay called Significant Ecological Areas (SEAs) designated in the County's General Plan Conservation/Open Space Element. SEAs are ecologically important land and water systems that support valuable habitat for plants and animals, often integral to the preservation of rare, threatened, or endangered species and the conservation of biological diversity in Los Angeles County. While SEAs are not preserves, they are areas where Los Angeles County deems it important to facilitate a balance between development and resource conservation.

Together, the General Plan overlays and a SEA conditional use permit (CUP) process are referred to as the SEA Program. The SEA Program, through goals and policies of the General Plan and the SEA ordinance (Title 22 Zoning Regulations, Section 22.56.215) help guide development within SEAs. The SEA ordinance establishes the permitting, design standards, and review process for development within SEAs, and permits are reviewed by the SEATAC. Development activities in the SEAs are reviewed closely in order to conserve water and biological resources such as streams, oak woodlands, and threatened or endangered species and their habitat.

The BSA lies approximately 2 miles from the Santa Susana Mountains and Simi Hills SEA. The project is not anticipated to affect resources within this SEA, and as a result the SEA program would not be applicable to the proposed project.

City of Los Angeles Native Tree Protection Ordinance

In response to the City's declining oak tree population, the City enacted an oak tree protection ordinance in 1982. To further slow the decline of native trees, the City amended the two City Municipal Code sections pertaining to oak trees in April 2006 to include southern California black walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*) (Section 17.02 of City Municipal Code). Additionally, trees must be four inches or greater in diameter at 4.5 feet above ground (DBH) to be considered protected. The Board of Public Works must issue a permit before any alterations to protected trees are made that could cause them to be damaged,

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[14] PRC Section 21000 et seq. and the State CEQA Guidelines, California Code of Regulations, Section 15000 et seq.

relocated or removed. Pruning also requires a permit and must comply with the pruning standards set forth by the Western Chapter of the International Society of Arboriculture.

Southern California black walnut and western sycamore trees with DBH measurements exceeding 4 inches were noted within the BSA. Individuals of these two species occur on private residential properties and outside the public right-of-way or on side streets off the project alignment where they will not be impacted. The area of protection for protected species generally extends to the dripline of the tree. However, the driplines of protected trees do not extend over the project alignment. As a result, it is anticipated that no protected trees would be impacted by the project. Further, native trees that were planted or grown as part of a tree planting program are not considered “protected” under the ordinance. It is likely that the southern California black walnut and western sycamore specimens identified within the BSA were planted and are not naturally-occurring.

8. IMPACTS ON BIOLOGICAL RESOURCES

Biological resources may be either directly or indirectly impacted by a project. Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct**: Any alteration, physical disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include clearing vegetation, encroaching into wetlands or a stream, and the loss of individual species and/or their habitats.

- **Indirect**: As a result of project-related activities, biological resources may also be affected in a manner that is ancillary to physical impacts. Examples include elevated noise and dust levels, soil compaction, increased human activity, decreased water quality, and the introduction of invasive wildlife (domestic cats and dogs) and plants.

- **Permanent**: All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.

- **Temporary**: Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include the generation of fugitive dust during construction; or removing vegetation for the preparation of stream bank stabilization activities, and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Surface disturbance that removes vegetation and disturbs the soil is considered a long-term temporary impact because of slow natural recovery in arid ecosystems.

8.1 Construction

The anticipated direct and indirect impacts of proposed project construction on biological resources are described below. Trenching, installation of pipelines and regulating stations, backfilling trenches, and repaving roadways would result in temporary impacts; no permanent impacts would occur.

8.1.1 Vegetation

No vegetation would be removed during implementation of the proposed project. All work would occur within paved roadways. As a result, direct impacts to vegetation would not occur.

Indirect impacts to vegetation during project construction could include the accumulation of fugitive dust. Other indirect impacts could include disturbance of surfaces that, if not controlled, could increase the potential for increased erosion and sediment deposition beyond the project's footprint. Although indirect impacts to non-native ornamental trees would not constitute a significant impact, with implementation of standard construction practices related to fugitive dust (e.g. implementation of Rule 403 measures required by the South Coast Air Quality Management District [SCAQMD]) and erosion control (e.g., implementation of a Storm Water Pollution Prevention Plant) as identified in Section 2.7 above, the potential for indirect impacts to any vegetation would be further reduced to less than significant

8.1.2 Special-Status Plant Species

No federal or State-listed plant species were identified during the field survey, and special-status plants are not expected to occur in the BSA due to a lack of potentially suitable habitat. As a result, significant direct impacts on special-status plants are not anticipated.

Indirect impacts to special-status plant species occurring outside the Project site could result from construction-related habitat loss and modification of sensitive natural communities related to dust, noise, and stormwater runoff. If such impacts were to occur, they would be considered significant. However, suitable habitat for special-status plants is not present in the urbanized environment surrounding the project. As a result, indirect impacts to special-status plants are not anticipated.

8.1.3 Sensitive Natural Communities

Implementation of the proposed project would not result in direct or indirect impacts to any sensitive natural communities. As presented in Section 6, no sensitive natural vegetation communities occur within the BSA. However, aquatic communities (i.e. wetlands or other waters) under regulatory jurisdiction of USACE, CDFW, and the RWQCB coincide with the BSA, in the form of Aliso Canyon Wash. The truck line and the distribution mainline would be installed via the microtunneling method beneath the channel, and as a result, no work would occur in or impact the channel. As a result, significant impacts to sensitive natural communities would not occur.

8.1.4 Protected Trees

California black walnut and western sycamore trees protected under the City of Los Angeles Native Tree Protection Ordinance were identified in the BSA during the field survey. These specimens occur on private residential properties or along side streets where they will not be impacted by the project. No trees are currently proposed for removal. As a result, a Tree Removal Permit in compliance with the City's Native Tree Protection Ordinance is not anticipated, and no significant impacts would occur to ordinance-protected trees.

8.1.5 Common Wildlife Species

Elements of project construction could potentially result in the mortality of individual wildlife species, particularly those species with limited mobility. Additionally, short-term indirect effects on wildlife, primarily urban bird species (discussed further below), would occur due to noise disturbances caused by heavy equipment and increased human activity. Although not considered significant, direct impacts to common wildlife species are not anticipated because all work would occur within the road right-of-way. In addition, impacts to common terrestrial wildlife would be avoided or minimized by implementing and adhering to standard construction measures related to fugitive dust, erosion control, and noise. As a result, significant impacts to wildlife are not anticipated

Ornamental trees in the BSA provide potentially suitable nesting habitat for urban bird species. As a result, birds protected by the MBTA and by CFGC have the potential to nest in the BSA. No vegetation would be removed during project implementation and as a result, direct impacts to nesting birds or their associated habitat would be less than significant.

Indirect impacts to nesting birds within the BSA could occur during construction as a result of noise, dust, and increased human presence from construction activities. Such disturbances could result in increased nestling mortality due to nest abandonment or decreased feeding frequency. Such indicted impacts would be considered significant. However, by implementing standard construction measures related to fugitive dust, erosion control, and noise, and by adhering to the MBTA BMP outlined in Section 2.7 related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to nesting birds protected under the MBTA and by CFGC would be reduced to less than significant.

8.1.6 Special-Status Wildlife Species

Individual special-status wildlife species could be directly and indirectly affected during construction in the same manner as described above; however, no federal or State-listed wildlife species have been identified in the BSA, and potentially suitable habitat for such species is absent from the BSA. As a result, direct and indirect impacts to special-status wildlife would not occur. As discussed above, implementing standard construction measures related to fugitive dust, erosion control, and noise, and by adhering to the MBTA BMP outlined in Section 2.7 related to pre-construction surveys and providing qualified biological monitors as necessary, indirect impacts to non-listed special-status birds nesting in the BSA would be reduced to less than significant.

8.1.7 Wildlife Movement Corridor

The BSA does not serve as a regional wildlife corridor and as a result, direct impacts to a regional wildlife movement corridor would not occur. However, as previously presented, Aliso Canyon Wash could provide opportunities for local wildlife movement. Since no work would occur in the channel and no night work is proposed, project construction activities are not anticipated to impact the channel's potential to facilitate wildlife movement. As a result, impacts to a wildlife movement corridor are not anticipated.

8.2 Operation

Significant impacts to biological resources during operations and routine maintenance of the project are not anticipated. All project facilities would be located belowground and operational and maintenance activities would be conducted within paved roadways and would generally not change conditions from those present prior to project implementation.

9. CONCLUSIONS

Based on the analysis presented in this technical memo, significant impacts to nesting birds protected under the MBTA and CFGC could occur during project construction. However, by implementing and adhering to the MBTA BMP outlined in Section 2.7, significant impacts to biological resources would be reduced to a level below significance.

Should you have any questions or comments regarding this memo, or if additional information is required, please feel free to contact me.

Sincerely,

Arthur Popp

Arthur Popp
Senior Biologist

Enc:

Attachment A: Photographs of Existing Conditions within the BSA
Attachment B: Database Search Results
Attachment C: Special-Status Plant and Wildlife Species and Natural Communities

ATTACHMENT A

Photographs of Existing Conditions within the BSA

Photo 1: West-facing view along Roscoe Boulevard at intersection with Louise Avenue, at eastern terminus of project.

Photo 2: West-facing view of Roscoe Boulevard in vicinity of intersection with White Oak Ave.

Photo 3: South-facing view along Reseda Boulevard from vicinity of intersection with Bryant St.

Photo 4: West-facing view along Roscoe Boulevard at intersection with Reseda Boulevard.

Photo 5: Southeast-facing view of the Aliso Canyon Wash channel under Roscoe Boulevard.

Photo 6: West-facing view along Roscoe Boulevard in vicinity of intersection with Corbin Ave.

Photo 7: West-facing view along Roscoe Boulevard at intersection with Oakdale Ave.

Photo 8: West-facing view along Roscoe Boulevard at intersection with Penfield Ave.

Photo 9: West-facing view along Roscoe Boulevard at intersection with Oso Ave.

Photo 10: East-facing view along Roscoe Boulevard at intersection with Mason Ave, at the western terminus of the project alignment.

ATTACHMENT B

Results of Database Searches
California Natural Diversity Database (CNDDB)
California Native Plant Society Inventory of Rare and Endangered Species (CNPS)
Information for Planning and Consultation (IPaC)

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Canoga Park (3411825) OR Santa Susana (3411836) OR Oat Mountain (3411835) OR San Fernando (3411834) OR Calabasas (3411826) OR Van Nuys (3411824) OR Malibu Beach (3411816) OR Topanga (3411815) OR Beverly Hills (3411814))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Aglaothorax longipennis Santa Monica shieldback katydid	IIORT32020	None	None	G1G2	S1S2	
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
Anniella spp. California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Anniella stebbinsi Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Astragalus brauntonii Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Astragalus pycnostachyus var. lanosissimus Ventura Marsh milk-vetch	PDFAB0F7B1	Endangered	Endangered	G2T1	S1	1B.1
Astragalus tener var. titi coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atractelmis wawona Wawona riffle beetle	IICOL58010	None	None	G3	S1S2	
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Baccharis malibuensis Malibu baccharis	PDAST0W0W0	None	None	G1	S1	1B.1
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus fimbriatus late-flowered mariposa-lily	PMLIL0D1J2	None	None	G3	S3	1B.3
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Catostomus santaanae Santa Ana sucker	AFCJC02190	Threatened	None	G1	S1	
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	None	Endangered	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Cismontane Alkali Marsh Cismontane Alkali Marsh	CTT52310CA	None	None	G1	S1.1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Deinandra minthornii Santa Susana tarplant	PDAST4R0J0	None	Rare	G2	S2	1B.2
Diadophis punctatus modestus San Bernardino ringneck snake	ARADB10015	None	None	G5T2T3	S2?	
Dithyrea maritima beach spectaclepod	PDBRA10020	None	Threatened	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya cymosa ssp. marcescens marcescent dudleya	PDCRA040A3	Threatened	Rare	G5T2	S2	1B.2
Dudleya cymosa ssp. ovatifolia Santa Monica dudleya	PDCRA040A5	Threatened	None	G5T1	S1	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Eugnosta busckana Busck's gallmoth	IILEM2X090	None	None	G1G3	SH	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphydryas editha quino quino checkerspot butterfly	IILEPK405L	Endangered	None	G5T1T2	S1S2	
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S1S2	
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Helminthoglypta traskii pacoimensis Pacoima shoulderband	IMGASC2472	None	None	G1G2T1	S1	
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Isocoma menziesii var. decumbens decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G3G4	S3S4	
Lasiurus blossevillii western red bat	AMACC05060	None	None	G4	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
Lupinus paynei Payne's bush lupine	PDFAB2B580	None	None	G1Q	S1	1B.1
Macrotus californicus California leaf-nosed bat	AMACB01010	None	None	G3G4	S3	SSC
Malacothamnus davidsonii Davidson's bush-mallow	PDMAL0Q040	None	None	G2	S2	1B.2
Microtus californicus stephensi south coast marsh vole	AMAFF11035	None	None	G5T2T3	S1S2	SSC
Monardella hypoleuca ssp. hypoleuca white-veined monardella	PDLAM180A5	None	None	G4T3	S3	1B.3
Myotis ciliolabrum western small-footed myotis	AMACC01140	None	None	G5	S3	
Myotis yumanensis Yuma myotis	AMACC01020	None	None	G5	S4	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Navarretia ojaiensis Ojai navarretia	PDPLM0C130	None	None	G2	S2	1B.1
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nolina cismontana chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Pentachaeta lyonii Lyon's pentachaeta	PDAST6X060	Endangered	Endangered	G1	S1	1B.1
Perognathus longimembris brevinasus Los Angeles pocket mouse	AMAFD01041	None	None	G5T2	S1S2	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana muscosa southern mountain yellow-legged frog	AAABH01330	Endangered	Endangered	G1	S1	WL
Rhinichthys osculus ssp. 3 Santa Ana speckled dace	AFCJB3705K	None	None	G5T1	S1	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Socalchemmis gertschi Gertsch's socalchemmis spider	ILARAU7010	None	None	G1	S1	
Southern California Coastal Lagoon Southern California Coastal Lagoon	CALE1220CA	None	None	GNR	SNR	
Southern California Steelhead Stream Southern California Steelhead Stream	CARE2310CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Mixed Riparian Forest Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Willow Scrub Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Spermolepis lateriflora western bristly scaleseed	PDAPI23080	None	None	G5	SH	2A
Symphyotrichum greatae Greata's aster	PDASTE80U0	None	None	G2	S2	1B.3
Taricha torosa Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Thelypteris puberula var. sonorensis Sonoran maiden fern	PPTHE05192	None	None	G5T3	S2	2B.2
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 104

California Native Plant Society - Inventory of Rare and Endangered Plants

<u>Query Criterion</u>: Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles.

ScientificName	CommonName	California Rare Plant Rank	State Listing (CDFW)	Federal Listing (USFWS)
Calystegia peirsonii	Peirson's morning-glory	4.2	None	None
Centromadia parryi ssp. australis	southern tarplant	1B.1	None	None
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	1B.2	Endangered	Endangered
Atriplex parishii	Parish's brittlescale	1B.1	None	None
Baccharis plummerae ssp. plummerae	Plummer's baccharis	4.3	None	None
Harpagonella palmeri	Palmer's grapplinghook	4.2	None	None
Symphyotrichum greatae	Greata's aster	1B.3	None	None
Astragalus brauntonii	Braunton's milk-vetch	1B.1	None	Endangered
Astragalus pycnostachyus var. lanosissimus	Ventura Marsh milk-vetch	1B.1	Endangered	Endangered
Astragalus tener var. titi	coastal dunes milk-vetch	1B.1	Endangered	Endangered
Calochortus catalinae	Catalina mariposa lily	4.2	None	None
Dudleya cymosa ssp. marcescens	marcescent dudleya	1B.2	Rare	Threatened
Dudleya cymosa ssp. ovatifolia	Santa Monica dudleya	1B.1	None	Endangered
Dudleya densiflora	San Gabriel Mountains dudley	1B.1	None	None
Dudleya multicaulis	many-stemmed dudleya	1B.2	None	None
Dodecahema leptoceras	slender-horned spineflower	1B.1	Endangered	Endangered
Cercocarpus betuloides var. blancheae	island mountain-mahogany	4.3	None	None
Chorizanthe parryi var. fernandina	San Fernando Valley spineflow	1B.1	Endangered	None
Dichondra occidentalis	western dichondra	4.2	None	None
Dithyrea maritima	beach spectaclepod	1B.1	Threatened	None
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	1B.1	None	None
Polygala cornuta var. fishiae	Fish's milkwort	4.3	None	None
Galium cliftonsmithii	Santa Barbara bedstraw	4.3	None	None
Deinandra minthornii	Santa Susana tarplant	1B.2	Rare	None
Juncus acutus ssp. leopoldii	southwestern spiny rush	4.2	None	None
Lepechinia fragrans	fragrant pitcher sage	4.2	None	None
Berberis nevinii	Nevin's barberry	1B.1	Endangered	Endangered
Malacothamnus davidsonii	Davidson's bush-mallow	1B.2	None	None
Atriplex coulteri	Coulter's saltbush	1B.2	None	None
Atriplex pacifica	south coast saltscale	1B.2	None	None
Orcuttia californica	California Orcutt grass	1B.1	Endangered	Endangered
Pentachaeta lyonii	Lyon's pentachaeta	1B.1	Endangered	Endangered
Isocoma menziesii var. decumbens	decumbent goldenbush	1B.2	None	None
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	4.3	None	None
Thelypteris puberula var. sonorensis	Sonoran maiden fern	2B.2	None	None
Physalis lobata	lobed ground-cherry	2B.3	None	None
Romneya coulteri	Coulter's matilija poppy	4.2	None	None

ScientificName	CommonName	California Rare Plant Rank	State Listing (CDFW)	Federal Listing (USFWS)
Atriplex serenana var. davidsonii	Davidson's saltscale	1B.2	None	None
Calochortus clavatus var. gracilis	slender mariposa-lily	1B.2	None	None
Calochortus plummerae	Plummer's mariposa-lily	4.2	None	None
Calochortus fimbriatus	late-flowered mariposa-lily	1B.3	None	None
Canbya candida	white pygmy-poppy	4.2	None	None
Convolvulus simulans	small-flowered morning-glory	4.2	None	None
Juglans californica	Southern California black waln	4.2	None	None
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	1B.1	None	None
Lilium humboldtii ssp. ocellatum	ocellated Humboldt lily	4.2	None	None
Nama stenocarpa	mud nama	2B.2	None	None
Quercus dumosa	Nuttall's scrub oak	1B.1	None	None
Sidalcea neomexicana	salt spring checkerbloom	2B.2	None	None
Calandrinia breweri	Brewer's calandrinia	4.2	None	None
Baccharis malibuensis	Malibu baccharis	1B.1	None	None
Horkelia cuneata var. puberula	mesa horkelia	1B.1	None	None
Nolina cismontana	chaparral nolina	1B.2	None	None
Navarretia ojaiensis	Ojai navarretia	1B.1	None	None
Monardella hypoleuca ssp. hypoleuca	white-veined monardella	1B.3	None	None
Spermolepis lateriflora	western bristly scaleseed	2A	None	None
Lupinus paynei	Payne's bush lupine	1B.1	None	None

California Native Plant Society, Rare Plant Program. 2021. Inventory of Rare and Endangered Plants (v9-01 0.0)
California Native Plant Society, Sacramento, CA. Website http://rareplants.cnps.org [accessed 4 June 2021]

IPaC

U.S. Fish & Wildlife Service

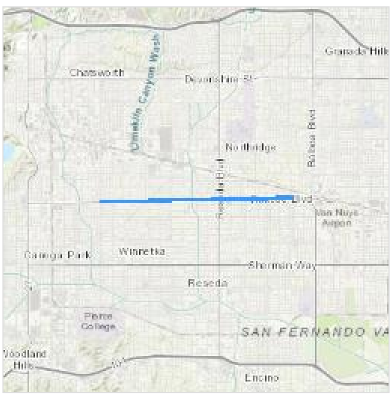
IPaC resource list

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

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

Location

Los Angeles County, California



Local office

Ventura Fish And Wildlife Office

(805) 644-1766
(805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

Endangered species

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

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

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

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

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

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

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

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

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

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8193	Endangered
Coastal California Gnatcatcher *Polioptila californica californica* Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5945	Endangered

Southwestern Willow Flycatcher Empidonax traillii extimus — Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

https://ecos.fws.gov/ecp/species/6749

Amphibians

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

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp Streptocephalus wootoni Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8148	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Braunton's Milk-vetch Astragalus brauntonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5674	Endangered
California Orcutt Grass Orcuttia californica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4923	Endangered
Gambel's Watercress Rorippa gambellii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4201	Endangered
Lyon's Pentachaeta Pentachaeta lyonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/4699	Endangered
Marsh Sandwort Arenaria paludicola Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2229	Endangered

Spreading Navarretia Navarretia fossalis | Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1334

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

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

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

Additional information can be found using the following links:

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

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

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Costa's Hummingbird Calypte costae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9470	Breeds Jan 15 to Jun 10
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch Carduelis lawrencei This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Long-billed Curlew Numenius americanus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5511	Breeds elsewhere
Marbled Godwit Limosa fedoa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Nuttall's Woodpecker Picoides nuttallii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20

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

Breeds Mar 15 to Jul 15

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

Breeds elsewhere

Short-billed Dowitcher Limnodromus griseus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Breeds elsewhere

Song Sparrow Melospiza melodia
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Breeds Feb 20 to Sep 5

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

Breeds Apr 15 to Jul 20

Tricolored Blackbird Agelaius tricolor
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Breeds Mar 15 to Aug 10

Whimbrel Numenius phaeopus
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Breeds elsewhere

Willet Tringa semipalmata
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Wrentit Chamaea fasciata
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Mar 15 to Aug 10

Probability of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey

events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

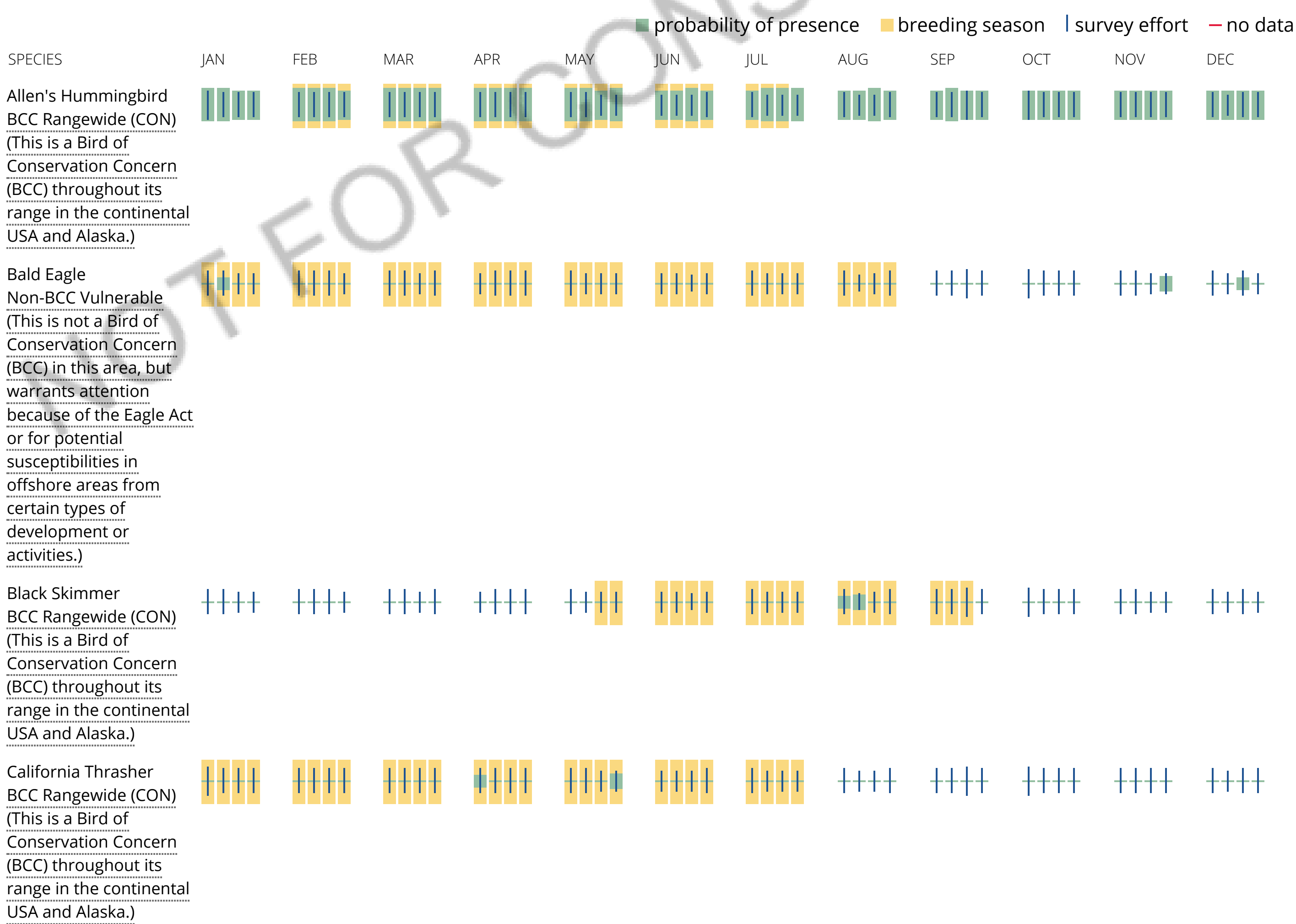
Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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

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

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

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



Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Costa's Hummingbird
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

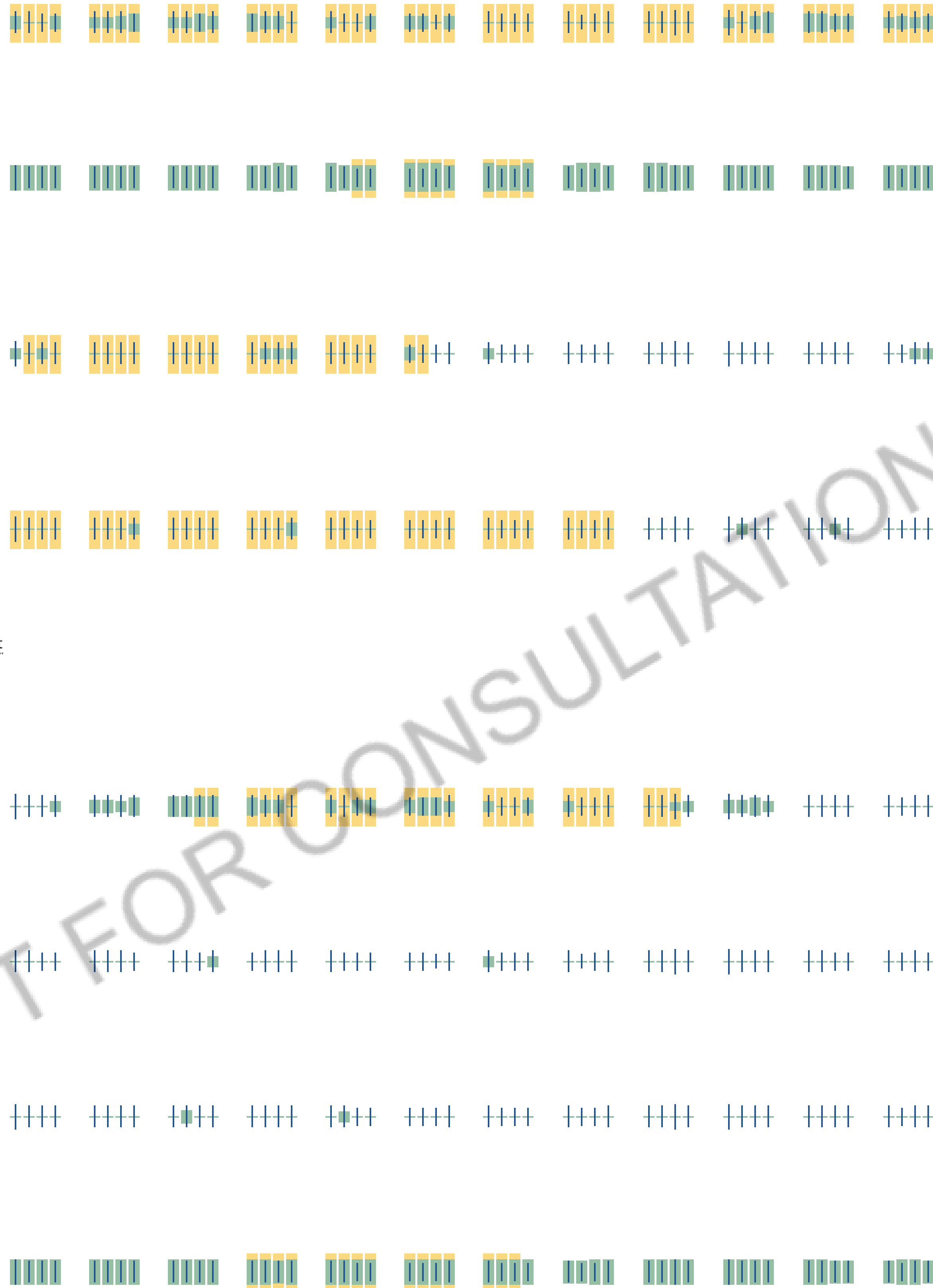
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

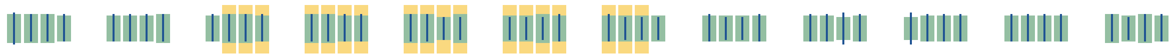
Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

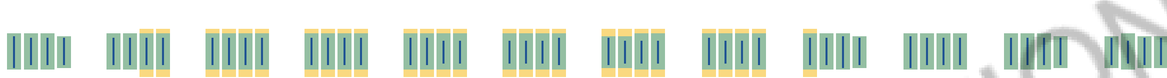
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



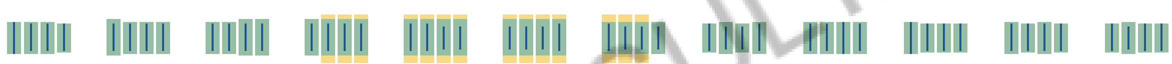
Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

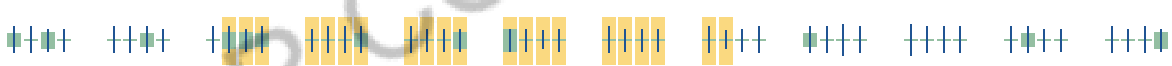
Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



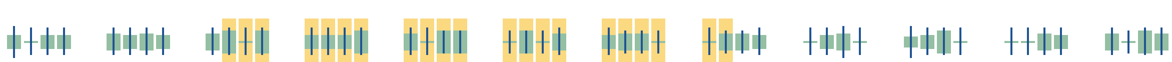
Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



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

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

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

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

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

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

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

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

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

This location overlaps the following wetlands:

RIVERINE
R4SBCr

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

Data limitations

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

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

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

Data exclusions

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

Data precautions

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

ATTACHMENT C

Table A. Special-Status Plant Species and Natural Vegetation Communities
Table B. Special-Status Wildlife Species

TABLE A. SPECIAL-STATUS PLANT SPECIES AND NATURAL VEGETATION COMMUNITIES[1]

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Plants		
marsh sandwort *Arenaria paludicola*	Federal: FE State: SE CRPR: 1B.1	Found in sandy openings in freshwater or brackish marshes and swamps. Occurs between 0-170 meters (10-560 feet). Blooms May-August.
Braunton's milk- vetch *Astragalus brauntonii*	Federal: FE State: None CRPR: 1B.1	Found in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland. Prefers recent burns or disturbed areas, in stiff gravelly clay soils overlying granite or limestone. Occurs between 5-640 meters (15-2,100 feet). Blooms January-August.
Ventura Marsh milk-vetch *Astragalus pycnostachyus var. lanosissimus*	Federal: FE State: SE CRPR: 1B.1	Occurs in coastal dunes, coastal scrub, and edges of coastal salt or brackish marshes and swamps. Occurs between 0-35 meters (0-115 feet). Blooms June-October.
coastal dunes milk-vetch *Astragalus tener var. titi*	Federal: FE State: SE CRPR: 1B.1	Found in vernally mesic areas in coastal bluff scrub, coastal dune, and coastal prairie habitats. Occurs between 0-50 meters (0-165 feet). Blooms March-May.
Coulter's saltbush *Atriplex coulteri*	Federal: None State: None CRPR: 1B.2	Often found in alkaline or clay habitats of coastal bluff scrub, coastal dunes, coastal scrub and valley and foothill grasslands. Occurs between 0-460 meters (0-1,510 feet). Blooms March-October.
south coast saltscale *Atriplex pacifica*	Federal: None State: None CRPR: 1B.2	Found in alkali sink, coastal sage scrub, wetland-riparian playas, and coastal habitats. Occurs between 0-140 meters (0-460 feet). Blooms March-October.
Parish's brittlescale *Atriplex parishii*	Federal: None State: None CRPR: 1B.1	Found in alkaline chenopod scrub, playas, and vernal pool habitats. Occurs between 25-1,900 meters (80-6,230 feet). Blooms June-October.
Davidon's saltscale *Atriplex serenana* var. *davidsonii*	Federal: None State: None CRPR: 1B.2	Found in coastal bluff scrub and coastal scrub habitats. Prefers alkaline soil. Occurs between 10-200 meters (30-660 feet). Blooms April-October.
Malibu baccharis *Baccharis malibuensis*	Federal: None State: None CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Occurs between 150–305 meters (500-1,000 feet). Blooms in August.
Plummer's baccharis *Baccharis plummerae* ssp. *plummerae*	Federal: None State: None CRPR: 4.3	Found in broadleaved upland forest, chaparral, cismontane woodland, and coastal scrub habitats. Occurs between 5-425 meters (15-1,395 feet). Blooms May-October.
Nevin's barberry *Berberis nevinii*	Federal: FE State: SE CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, and riparian scrub habitats. Occurs between 70-825 meters (230 to 2,700 feet). Blooms (Feb) March-June.
Brewer's calandrinia *Calandrinia breweri*	Federal: None State: None CRPR: 4.2	Prefers sandy or loamy soils in disturbed or burned areas within chaparral and coastal scrub habitats. Occurs between 10-1,220 meters (30-4,010 feet). Blooms (January) March-June.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Catalina mariposa-lily *Calochortus catalinae*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 15-700 meters (50-2,300 feet). Blooms February-June.
slender mariposa lily *Calochortus clavatus* var. *gracilis*	Federal: None State: None CRPR: 1B.2	Found in chaparral and coastal scrub, in shaded foothill canyons, often on grassy slopes within other habitats. Occurs between 320-1,000 meters (1,050-3,280 feet). Blooms March–June.
late-flowered mariposa lily *Calochortus fimbriatus*	Federal: None State: None CRPR: 1B.3	Found on serptentinite substrates in chaparral, cismontane woodland, and riparian woodland. Occurs between 275-1,905 meters (900-6,250 feet). Blooms June-August.
Plummer's mariposa-lily *Calochortus plummerae*	Federal: None State: None CRPR: 4.2	Found in coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, and lower montane coniferous forest habitats, on rocky and sandy sites (granitic or alluvial material). Occurs between 100–1,700 meters (330-5,580 feet). Blooms May-July.
Peirson's morning-glory *Calystegia peirsonii*	Federal: None State: None CRPR: 4.2	Found in chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland habitats. Occurs between 30-1,500 meters (95-4,925 feet). Blooms April-June.
white pygmy-poppy *Canbya candida*	Federal: None State: None CRPR 4.2	Prefers gravelly, sandy, granitic soils in Joshua tree woodland, Mojavean desert scrub and pinyon-juniper woodland habitats. Occurs between 600-1,460 meters (1,970-4,790 feet). Blooms March-June.
southern tarplant *Centromadia parryi ssp. australis*	Federal: None State: None CRPR: 1B.1	Found in margins of marshes and swamps, valley and foothill grassland, and vernal pool habitats. Occurs between 0-480 meters (0-1,570 feet). Blooms May-November.
island mountain-mahogany *Cercocarpus betuloides* var. *blancheae*	Federal: None State: None CRPR: 4.3	Found in closed-cone coniferous forest and chaparral habitats. Occurs between 30-600 meters (100-1,970 feet). Blooms February-May.
salt marsh bird's-beak *Chloropyron maritimum* ssp. *maritimum*	Federal: FE State: SE CRPR: 1B.2	Found in coastal dunes and coastal salt marshes and swamps. Occurs between 0-30 meters (0-100 feet). Blooms May-October (November).
San Fernando Valley spineflower *Chorizanthe parryi var. fernandina*	Federal: FC State: SE CRPR: 1B.1	Prefers sandy coastal scrub and valley and foothill grassland habitats. Occurs between 150-1,220 meters (495-4,000 feet). Blooms April-July.
small-flowered morning-glory *Convolvulus simulans*	Federal: None State: None CRPR: 4.2	Prefers clay soils and serpentine seeps in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 30-700 meters (100- 2,300 feet). Blooms March-July.
Santa Susana tarplant *Deinandra minthornii*	Federal: None State: SR CRPR: 1B.2	Found in rocky areas in chaparral and coastal scrub habitats. Occurs between 280-760 meters (920-2,495 feet). Blooms July-November.
western dichondra *Dichondra occidentalis*	Federal: None State: None CRPR: 4.2	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats. Occurs between 50-500 meters (160-1,640 feet). Blooms (January) March-July.

Common Name *Scientific Name*[2]	**Status**[3]	**General Habitat Description**[4]
beach spectaclepod *Dithyrea maritima*	Federal: None State: ST CRPR: 1B.1	Found in coastal dune and sandy coastal scrub habitats. Occurs between 0-50 meters (0-165 feet). Blooms March-May.
slender-horned spineflower *Dodecahema leptoceras*	Federal: FE State: SE CRPR: 1B.1	Sandy chaparral, cismontane woodland, and alluvial fan coastal scrub. Occurs between 200-760 meters (890–2,510 feet). Blooms April–June.
Blochman's dudleya *Dudleya blochmaniae ssp. blochmaniae*	Federal: None State: None CRPR: 1B.1	Prefers clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 5-450 meters (15-1,475 feet). Blooms April-June.
marcescent dudleya *Dudleya cymosa* ssp. *marcescens*	Federal: FT State: SR CRPR: 1B.2	Found in volcanic or rocky soils in chaparral habitats. Occurs between 150-520 meters (490-1,705 feet). Blooms April-July.
Santa Monica dudleya *Dudleya cymosa* ssp. *ovatifolia*	Federal: FT State: None CRPR: 1B.1	Found in volcanic or sedimentary, rocky soils in chaparral and coastal scrub. Occurs between 150–1,675 meters (495–5,525 feet). Blooms March–June.
San Gabriel mountains dudleya *Dudleya densiflora*	Federal: None State: None CRPR: 1B.1	Found in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Occurs between 245-610 meters (800-2,000 feet). Blooms March-July.
many-stemmed dudleya *Dudleya multicaulis*	Federal: None State: None CRPR: 1B.2	Found in chaparral, coastal scrub, and valley and foothill grassland habitats. Often found in clay soils. Occurs between 15-790 meters (50-2,520 feet). Blooms April-July.
Santa Barbara bedstraw *Galium cliftonsmithii*	Federal: None State: None CRPR: 4.3	Found in cismontane woodland habitats. Occurs between 200-1,220 meters (655-4,005 feet). Blooms May-July.
Palmer's grapplinghook *Harpogonella palmeri*	Federal: None State: None CRPR: 4.2	Found in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 20-955 meters (65-3,135 feet). Blooms March- May.
mesa horkelia *Horkelia cuneata* ssp. *puperula*	Federal: None State: None CRPR: 1B.1	Prefers sandy or gravelly sites in chaparral, cismontane woodland, and coastal scrub. Occurs between 70-810 meters (230-2,660 feet). Blooms February-September.
decumbent goldenbush *Isocoma menziesii* var. *decumbens*	Federal: None State: None CRPR: 1B.2	Found in chaparral and coastal scrub habitats. Often found in sandy soils or disturbed areas. Occurs between 10-135 meters (30-445 feet). Blooms April-November.
southern California black walnut *Juglans californica*	Federal: None State: None CRPR: 4.2	Prefers alluvial sites in chaparral, cismontane woodlands, coastal scrub, and riparian woodland. Occurs between 50-900 meters (160-2,950 feet). Blooms March-August.
southwestern spiny rush *Juncus acutus* ssp. *coulteri*	Federal: None State: None CRPR: 4.2	Found in mesic coastal dunes, alkaline meadows and seeps, and coastal salt marshes and swamps. Occurs between 0-900 meters (0-2,955 feet). Blooms (March) May-June.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	Federal: None State: None CRPR: 1B.1	Found in coastal salt marshes, playas, and vernal pools. Occurs between 0-1,220 meters (0-4,000 feet). Blooms February-June.
fragrant pitcher sage *Lepechinia fragrans*	Federal: None State: None CRPR: 4.2	Found in chaparral habitats. Occurs between 20-1,310 meters (65-4,300 feet). Blooms March-October.

Common Name ***Scientific Name[2]***	**Status[3]**	**General Habitat Description[4]**
Robinson's pepper-grass *Lepidium virginicum* var. *robinsonii*	Federal: None State: None CRPR: 4.3	Found in chaparral and coastal scrub habitats. Occurs between 0-885 meters (0-2,905 feet). Blooms January-July.
ocellated Humboldt lily *Lilium humboldtii spp. ocellatum*	Federal: None State: None CRPR: 4.2	Prefers openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Occurs between 30-1,800 meters (100-6,000 feet). Blooms March-July (August).
Payne's bush lupine *Lupinus paynei*	Federal: None State: None CRPR: 1B.1	Prefers sandy substrates in coastal scrub, riparian scrub, and valley and foothill grassland habitats. Occurs between 220-420 meters (720-1,380 feet). Blooms March-April (May-July).
Davidson's bush-mallow *Malacothamnus davidsonii*	Federal: None State: None CRPR: 1B.2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Occurs between 185-855 meters (610-2,800 feet). Blooms June-January.
white-veined monardella *Monardella hypoleuca ssp. hypoleuca*	Federal: None State: None CRPR: 1B.3	Found in lower montane coniferous forest in scree, disturbed areas, rocky or gravelly areas, and roadside habitats. Occurs between 975-2,920 meters (3,200-9,580 feet). Blooms May-August.
mud nama *Nama stenocarpa*	Federal: None State: None CRPR: 2B.2	Found in marshes and swamps, lake margins, and riverbanks. Occurs between 5-500 meters (15-1,640 feet). Blooms January-July.
spreading navarretia *Navarretia fossalis*	Federal: FT State: None CRPR: 1B.1	Found in chenopod scrub, shallow freshwater marshes and swamps, playas, and vernal pool habitats. Occurs between 30-665 meters (95-2,185 feet). Blooms April-June.
Ojai navarretia *Navarretia ojaiensis*	Federal: None State: None CRPR: 1B.1	Prefers openings in chaparral and coastal scrub, valley and foothill grasslands. Occurs between 275-620 meters (920-2,030 feet). Blooms May-July.
chaparral nolina *Nolina cismontane*	Federal: None State: None CRPR: 1B.2	Prefers sandstone or gabbro chaparral and coastal scrub. Occurs between 140-1,275 meters (460-4,180 feet). Blooms (March) May-July.
California Orcutt grass *Orcuttia califórnica*	Federal: FE State: SE CRPR: 1B.1	Found in vernal pools. Occurs between 15-660 meters (50-2,165 feet). Blooms April-August
Lyon's pentachaeta *Pentachaeta lyonii*	Federal: FE State: SE CRPR: 1B.1	Prefers rocky, clay sites in chaparral, coastal scrub, and valley and foothill grassland habitats. Occurs between 30-690 meters (100-2,265 feet). Blooms February-August.
lobed ground-cherry *Physalis lobata*	Federal: None State: None CRPR: 2B.3	Prefers decomposed granitic soils in Mojavean desert scrub or playas. Occurs between 500-800 meters (1,640-2,625 feet). Blooms (May) September-June.
Fish's milkwort *Polygala cornuta* var. *fishiae*	Federal: None State: None CRPR: 4.3	Found in chaparral, cismontane woodland, and riparian woodland habitats. Occurs between 100-1,000 meters (330-3,280 feet). Blooms May-August.
Nuttall's scrub oak *Quercus dumosa*	Federal: None State: None CRPR: 1B.1	Prefers sandy or clay loam soils in closed-cone coniferous forest, chaparral, and coastal scrub habitats. Occurs between 15-400 meters (45-1,315 feet). Blooms February-April (May-August).

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Coulter's matilija poppy *Romneya coulteri*	Federal: None State: None CRPR: 4.2	Often found in burns in chaparral or coastal scrub habitats. Occurs between 20-1,200 meters (65-3,940 feet). Blooms March-July (August).
Gambel's watercress *Rorippa gambellii*	Federal: FE State: ST CRPR: 1B.1	Prefers freshwater or brackish marshes and swamps. Occurs between 5-330 meters (15-1,080 feet). Blooms April-October.
salt spring checkerbloom *Sidalcea neomexicana*	Federal: None State: None CRPR: 2B.2	Prefers alkaline or mesic sites in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playa habitats. Occurs between 15-1,530 meters (45-5,020 feet). Blooms March-June.
western bristly scaleseed *Spermolepis lateriflora*	Federal: None State: None CRPR: 2A	Prefers rocky or sandy substrates in Sonoran Desert scrub habitats. Occurs between 365–670 meters (1,205–2,210 feet). Blooms March–April.
Greata's aster *Symphyotrichum greatae*	Federal: None State: None CRPR: 1B.3	Mesic sites in broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and riparian woodland. Occurs between 300-2,010 meters (980-6,590 feet). Blooms June-October.
Sonoran maiden fern *Thelypteris puberula* var. *sonorensis*	Federal: None State: None CRPR: 2B.2	Found in meadows and seeps (seeps and streams). Occurs between 50–610 meters (165–2,015 feet). Blooms January–September.
Sensitive Natural Communities		
California Walnut Woodland	CNDDB	
Cismontane Alkali Marsh	CNDDB	
Riversidean Alluvial Fan Sage Scrub	CNDDB	
Southern California Coastal Lagoon	CNDDB	
Southern California Steelhead Stream	CNDDB	
Southern Coast Live Oak Riparian Forest	CNDDB	
Southern Coastal Salt Marsh	CNDDB	
Southern Cottonwood Willow Riparian Forest	CNDDB	
Southern Mixed Riparian Forest	CNDDB	
Southern Sycamore Alder Riparian Woodland	CNDDB	
Southern Willow Scrub	CNDDB	
Valley Needlegrass Grassland	CNDDB	
Valley Oak Woodland	CNDDB	

[1] Special-status plant species and natural vegetation communities known from the CNDDB and CNPS to occur on the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles, and from IPAC for the project vicinity.

[2] Nomenclature for special-status plant species conforms to CNPS.

[3] Sensitivity Status Codes

Federal	**FT** – Federally Threatened under the Federal Endangered Species Act **FE** – Federally Endangered under the Federal Endangered Species Act **FC** – A Federal Candidate for listing under the Federal Endangered Species Act
State	**ST** – State Threatened under the California Endangered Species Act **SE** – State Endangered under the California Endangered Species Act **SR** – State Rare under the California Endangered Species Act
CRPR	California Rare Plant Rank (CRPR) **1A:** Plants presumed extinct in California **1B**: Plants rare, threatened, or endangered in California and elsewhere **2**: Plants rare, threatened, or endangered in California, but more common elsewhere **3**: Plants more information is needed for **4**: Plants of limited distribution – a watch list **0.1**: Seriously threatened in California **0.2**: Fairly endangered in California **0.3**: Not very endangered in California California Department of Fish and Wildlife (CDFW)

[4] General Habitat Descriptions from CNPS.

TABLE B. SPECIAL-STATUS WILDLIFE SPECIES[1]

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Invertebrates		
Santa Monica shieldback katydid *Aglaothorax longipennis*	Federal: None State: None Other: CNDDB	Endemic to the Santa Monica mountains, specifically to one known population at the mouth of Big Rock Canyon. Inhabits chaparral and streambeds, as well as introduced iceplants.
Wawona riffle beetle *Atractelmis wawona*	Federal: None State: None Other: CNDDB	Known from interior mountain ranges in central California.
Crotch bumble bee *Bombus crotchii*	Federal: None State: CE Other: CNDDB	Occurs at relatively warm and dry sites, including the inner Coast Range of California and the margins of the Mojave Desert.
vernal pool fairy shrimp *Branchinecta lynchi*	Federal: FT State: None Other: CNDDB	Occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. The majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.
sandy beach tiger beetle *Cicindela hirticolis gravida*	Federal: None State: None Other: CNDDB	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Inhabits clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.
globose dune beetle *Coelus globosus*	Federal: None State: None Other: CNDDB	Found in coastal dune habitats.
monarch – California overwintering population *Danaus plexippus pop. 1*	Federal: CE State: None Other: CNDDB	Winter roosts occur along California coast from Mendocino County, south to Baja California, Mexico. Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.
Busck's gallmoth *Carolella busckana*	Federal: None State: None Other: CNDDB	Found in Southern California. On wing from November-February.
quino checkerspot butterfly *Euphydryas editha quino*	Federal: FE State: None Other: CNDDB	Occurs in coastal sage scrub habitats in southern California and northern Baja California. Larvae rely on host plants *Plantago erecta* or *Castilleja exserta* found in meadows and upland sage scrub/chaparral.
western ridged mussel *Gonidea angulata*	Federal: None State: None Other: CNDDB	Found in streams, rivers, and lakes with substrates ranging from gravel to firm mud. Requires at least some silt, sand, or clay.
Pacoima shoulderband *Helminthoglypta traskii pacoimensis*	Federal: None State: None Other: CNDDB	Known from the San Gabriel mountains and Pacoima Canyon in Los Angeles County.
Gertsch's socalchemmis spider *Socalchemmis gertschi*	Federal: None State: None Other: CNDDB	Inhabits sage scrub, chaparral, oak woodland, and coniferous forest, generally in rocky outcrops or talus slopes in non-arid climates. Known only from Brentwood and Topanga Canyon.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
Riverside fairy shrimp *Streptocephalus woottoni*	Federal: FE State: None Other: CNDDB	Lives in vernal pools of at least 30 centimeters in depth, from January through March. Found in Riverside and San Diego counties. Also found in northern Baja California.
Amphibians		
arroyo toad *Anaxyrus californicus*	Federal: FE State: None Other: CNDDB	Gravelly or sandy washes, stream and river banks, and arroyos. Also, upland habitat near washes and streams such as sage scrub, mixed chaparral, Joshua tree woodland, and sagebrush habitats.
California red-legged frog *Rana draytonii*	Federal: FT State: None Other: SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development and must have access to aestivation habitat. Endemic to California and Baja California, at elevations ranging from sea level to 1,524 meters (5,000 feet). Has a distinct aquatic and upland habitat requirement which includes pools of slow-moving streams, perennial or ephemeral ponds and upland sheltering habitats.
southern mountain yellow-legged frog *Rana muscosa*	Federal: FE State: SE Other: WL	Found in the southern Sierra Nevada mountains in lakes, ponds, and streams. Requires breeding habitat that does not dry out year-round.
western spadefoot *Spea hammondii*	Federal: None State: None Other: SSC	Inhabits grassland, oak woodland, coastal sage scrub, and chaparral vegetation in washes, floodplains, alluvial fans, playas, and alkali flats.
Coast Range newt	Federal: None State: None Other: SSC	Endemic to California. Found in wet forests, oak forests, chaparral, and rolling grasslands. In southern California, drier chaparral, oak woodland, and grasslands are used.
Reptiles		
California legless lizard *Anniella spp.*	Federal: None State: None Other: SSC	Prefer coastal dune, valley foothill grassland, chaparral, and coastal scrub habitats. Found primarily in areas with moist, loose sandy or organic soils where there is plenty of leaf litter for cover.
southern California legless lizard *Anniella stebbinsi*	Federal: None State: None Other: SSC	Occurs in moist warm loose soils in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Often under leaf litter or other surface objects.
coastal whiptail *Aspidoscelis tigris stejnegeri*	Federal: None State: None Other: SSC	Found in deserts and semiarid areas with sparse vegetation and open areas. Also occurs in woodland and riparian areas. Substrate may be firm, sandy, or rocky soils.
San Bernardino ringneck snake *Diadophis punctatus modestus*	Federal: None State: None Other: CNDDB	Prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests and woodlands.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
western pond turtle *Emys marmorata*	Federal: None State: None Other: SSC	Occurs in aquatic water bodies including flowing rivers and streams, permanent lakes, ponds, reservoirs, settling ponds, marshes and other wetlands. Semi- permanent water bodies such as stock ponds, vernal pools and seasonal wetlands can also be utilized on a temporary basis.
coast horned lizard *Phrynosoma blainvillii*	Federal: None State: None Other: CNDDB	Inhabits coastal sage scrub and chaparral in arid and semiarid climates. Prefers friable, rocky, or shallow sandy soils.
two-striped gartersnake *Thamnophis hammondii*	Federal: None State: None Other: SSC	Highly aquatic, found in or near permanent freshwater, often along streams with rocky beds and riparian growth. Known from coastal California from the vicinity of Salinas to northwest Baja California, from sea to about 2,135 meters (7,000 feet).
Fish		
Santa Ana sucker *Catostomus santaanae*	Federal: FT State: None Other: CNDDB	Permanent streams and rivers, with depths from a few centimeters to over a meter. Water must be cool with variable flows. Substrates of gravel, rubble and boulders are preferred for foraging and required for breeding.
tidewater goby *Eucyclogobius newberryi*	Federal: FE State: None Other: CNDDB	Benthic fish that occurs in small coastal lagoons, lower reaches of streams, and uppermost portions of large bays. It is most abundant in the upper ends of lagoons created by small coastal streams. In lower sections of coastal streams, it occurs in fresh to brackish water (preferably less than 10 ppt).
arroyo chub *Gila orcuttii*	Federal: None State: None Other: SSC	Required habitat includes slow-moving or backwater sections of warm to cool (10 to 24°C) streams with mud or sand substrates. Depths of streams are typically greater than 41 centimeters (16 inches).
steelhead – southern California DPS *Oncorhynchus mykiss irideus pop. 10*	Federal: FE State: None Other: CNDDB	Found in Pacific Ocean tributaries from Aleutian Islands in Alaska south to Southern California. Anadromous forms are known as steelhead, freshwater forms as rainbow trout.
Santa Ana speckled dace *Rhinichthys osculus spp*. 3	Federal: None State: None Other: SSC	Small springs or streams to large rivers and dep lakes. Prefer clear, well oxygenated water, with movement due to currents or waves. Deep cover and overhead protection are also preferred.
Birds		
tricolored blackbird *Agelaius tricolor*	Federal: None State: ST Other: BCC, SSC	Inhabits annual grasslands, wet and dry vernal pools, seasonal wetlands. Frequently found in and around agricultural areas.
southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Federal: None State: None Other: WL	Resident in southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
golden eagle *Aquila chrysaetos*	Federal: none State: None Other: FP	Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Uncommon permanent resident and migrant throughout California, except center of Central Valley. Ranges from sea level up to 3,835 meters (0-11,500 feet). Habitat typically rolling foothills, mountain areas, sage-juniper flats, and desert.
burrowing owl *Athene cunicularia*	Federal: None State: None Other: BCC, SCC	Inhabits open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.
Swainson's hawk *Buteo swainsoni*	Federal: None State: ST Other: BCC	Nests in stands with few trees in juniper-sage flats and riparian areas. Utilizes adjacent grasslands, grain or alfalfa fields, or livestock pastures for foraging.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal: FT State: SE Other: BCC	Breeds in low to moderate elevation native forests lining the rivers and streams of western United States. Prefers cottonwood-willow forests. Migrate to wintering grounds in South America.
southwestern willow flycatcher *Empidonax traillii extimus*	Federal: FE State: SE Other: CNDDB	Inhabits riparian woodlands in southern California. Nests in extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters, between 610-2,440 meters (2,000-8,000 feet). Dense willow thickets are required for nesting and roosting. Low, exposed branches are used for singing posts/hunting perches.
American peregrine falcon *Falco peregrinus anatum*	Federal: Delisted State: Delisted Other: FP	Frequents bodies of water in open areas with cliffs and canyons nearby for cover and nesting. Also know to nest on tall buildings or bridges within urban environments.
California condor *Gymnogyps californianus*	Federal: FE State: SE Other: FP	Prefers mountainous country at low to moderate elevations, especially rocky and brushy areas with cliffs available for nest sites, with foraging habitat encompassing grasslands, oak savannas, mountain plateaus, ridges, and canyons. Condors often roost in snags or tall open-branched trees near important foraging grounds.
coastal California gnatcatcher *Polioptila californica californica*	Federal: FT State: None Other: SSC	Obligate, permanent resident of coastal sage scrub below 760 meters (2.500 feet) in southern California. Inhabits low, coastal sage scrub in arid washes, on mesas and slopes.
bank swallow *Riparia riparia*	Federal: None State: ST Other: CNDDB	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean to dig nesting hole.
least Bell's vireo *Vireo bellii pusillus*	Federal: FE State: SE	Summer resident of southern California in low riparian habitat in vicinity of water or in dry river bottoms, below 610 meters (2,000 feet).
Mammals		

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
pallid bat *Antrozous palidus*	Federal: None State: None Other: SCC, WBWG-H	Occurs in deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rock areas for roosting. Roosts must protect bats from high temperatures; very sensitive to disturbance of roosting sites.
Townsend's big-eared bat *Corynorhinus townsendii*	Federal: None State: None Other: SSC, WBWG-H	Lives in a variety of communities, including coastal conifer and broad-leafed forests, oak and conifer woodlands, arid grasslands and deserts, and high-elevation forests and meadows. Throughout most of its geographic range, it is most common in mesic sites. Habitat must include appropriate roosting, maternity, and hibernacula sites, such as caves and cave-like formations, free from disturbances by humans.
spotted bat *Euderma maculatum*	Federal: None State: None Other: SSC, WBWG-H	Prefers sites with adequate roosting habitat, such as cliffs. Feeds over water and along washes. May move from forests to lowlands in autumn. Found at a small number of localities, mostly in the foothills, mountains and desert regions of southern California. Preferred habitats include arid deserts, grasslands, and mixed conifer forests. Elevational range extends from below sea level in California to above 3,000 meters (10,000 ft).
western mastiff bat *Eumops perotis californicus*	Federal: None State: None Other: SCC, WBWG-H	Known from open semiarid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grassland, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels. Roost locations are generally high above the ground providing a 3-meter minimum clearance below the entrance for flight. Requires large open water drinking sites.
silver-haired bat *Lasionycteris noctivagans*	Federal: None State: None Other: WBWG-M	Occurs in coastal and montane coniferous forests, valley foothill woodlands, pinyon-juniper woodlands, and valley foothill and montane riparian habitats. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark.
western red bat *Lasiurus blossevillii*	Federal: None State: None Other: SSC, WBWG-H	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas
hoary bat *Lasiurus cinereus*	Federal: None State: None Other: WBWG-M	May be found at any location in California. Winters along the coast and in southern California, breeding inland and north of the winter range. During migration, may be found at locations far from the normal range. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees, feeds primarily on moths; requires water.

Common Name *Scientific Name*[2]	Status[3]	General Habitat Description[4]
California leaf-nosed bat *Macrotus californicus*	Federal: None State: None Other: SSC, WBWG-H	Roosts in rocky, rugged terrain with mines and caves. Forages over nearby flats and washes. Habitats occupied include desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, and palm oasis. California records are below 600 meters (2,000 feet).
south coast marsh vole *Microtus californicus stephensi*	Federal: None State: None Other: SCC	Occurs in wetland habitats and associated grasslands along the coast.
western small-footed myotis *Myotis ciliolabrum*	Federal: None State: None Other: CNDDB	Occurs in arid, upland habitats. Prefers open stands in forests and woodlands as well as brushy habitats. Utilizes streams, ponds, springs, and stock tanks for drinking and feeding. Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water. Found from sea level to at least 2,700 meters (8,900 feet).
Yuma myotis *Myotis yumanensis*	Federal: None State: None Other: CNDDB	Distribution is closely tied to bodies of water, which it uses as foraging sites and sources of drinking water. Found in a wide variety of habitats ranging from sea level to 3,300 m (11,000 ft), but it is uncommon to rare above 2560 m (8000 ft). Optimal habitats are open forests and woodlands with sources of water over which to feed.
San Diego desert woodrat *Neotoma lepida intermedia*	Federal: None State: None Other: SSC	Occurs in coastal scrub of southern California from San Diego County to San Luis Obispo County. Prefers moderate to dense canopies. Particularly abundant in rock outcrops and rocky cliffs and slopes.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: None Other: SSC	Inhabits lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, instead may be found hiding under weeds and dead leaves.

[1] Special-status species known from the CNDDB to occur on the Canoga Park, Santa Susana, Oat Mountain, San Fernando, Calabasas, Van Nuys, Malibu Beach, Topanga, and Beverly Hills quadrangles, and from IPAC for the project vicinity.

[2] Nomenclature for special-status wildlife conforms to CNDDB.

[3] Sensitivity Status Codes

<u>Federal</u> **FT** - Federally Threatened under Federal Endangered Species Act (FESA)
FE - Federally Endangered under FESA
<u>State</u> **ST** - State Threatened under California Endangered Species Act (CESA)
SE - State Endangered under CESA
SC – State Candidate for listing under CESA
<u>Other</u> **SSC** – Designated as a Species of Special Concern by CDFW
WL – Designated as a Watch List species by CDFW
CNDDB - Tracked by CDFW in the California Natural Diversity Data Base or considered locally sensitive

WBWG-H - Designated by the Western Bat Working Group (WBWG 2017) as High Priority - species that are imperiled or are at high risk of imperilment

WBWG-M - Designated by the WBWG (2017) as Medium Priority – a level of concern that should warrant closer evaluation, more research, and conservation actions of both species and possible threats.

[4] General Habitat Descriptions from CNDDB.

APPENDIX C

Cultural Resources Technical Memorandum

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Memorandum

To:	Ms. Nancy Chung Environmental Planning and Assessment Los Angeles Department of Public Works
Subject	Roscoe Trunk Line Replacement Project Cultural Resources Technical Memorandum
From	Allison Hill, M.A., RPA, AECOM
Date	March 18, 2022

Introduction

This technical memorandum describes the potential impact to cultural and paleontological resources associated with the Roscoe Trunk Line Replacement Project (proposed project) to be located along Roscoe Boulevard between Mason Avenue to the west and Louise Avenue to the east in the City of Los Angeles, California, on the border of the neighborhoods of Reseda to the south and Northridge to the north (project site) (Attachment 1). The Los Angeles Department of Water and Power (LADWP) proposes to replace the existing trunk line, which has a history of frequent leaks and breaks, and to increase reliability and operational flexibility to flow water. The proposed project includes replacing approximately 21,000 feet of existing high-density polyethylene pipeline along Roscoe Boulevard from Mason Avenue to Louise Avenue with 48-inch-diameter welded steel and ductile iron pipe. The Roscoe Trunk Line Replacement will supply the 947-foot Service Zone via the existing Roscoe and Louise Regulating Station and two new proposed underground pressure-regulating stations located at Roscoe Boulevard and Reseda Boulevard, and at Roscoe Boulevard and Penfield Avenue. Approximately 18,000 feet of 16-inch-diameter distribution mainlne pipeline will be installed as part of the proposed project to connect downstream of the three regulating stations. In addition, approximately 2,300 feet of new 12-inch mainline will be installed along Reseda Boulevard south of Bryant Street (Attachment 1). The proposed project also includes the installation of several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines, including pressure-relief stations, valves, flow meters, and manholes.

AECOM was retained by LADWP to conduct this cultural resources assessment for the proposed project. This assessment is based on archival research and focuses on three types of resources that could potentially be affected by the project: archaeological or built environment resources, tribal cultural resources, and paleontological resources.. A three-dimensional Area of Potential Effect (APE) has been delineated for the proposed project which addresses the potential for the project to impact cultural resources. The APE is the boundary of the road right-of-way for Roscoe Boulevard, Reseda Boulevard, and Penfield Avenue as shown in the attached APE map. The vertical APE is confined to the approximate maximum depths of excavation for the project which range between 10 and 20 feet below surface.

Geological Setting

The San Fernando Valley, where the project APE is situated, is located within the south-central portion of the Transverse Ranges, a 400-kilometer-long band of west trending mountain ranges and valleys (Yerkes and Campbell 2005). The project APE is mapped as having surficial deposits of Quaternary alluvium and young alluvial fan deposits. These deposits date from the Holocene to the late Pleistocene and consist of unconsolidated gravel, sand, and silt (Yerkes and Campbell 2005).

Cultural Setting

As a framework for discussing the types of cultural resources that might be encountered in the vicinity of the proposed project, the following section summarizes the major prehistoric and historic developments in and around the City of Los Angeles and the San Fernando Valley. This summary is followed by a more focused discussion of the history local to the proposed project APE.

Prehistoric Overview

While people are known to have inhabited southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al. 2004), the first evidence of human occupation in the Los Angeles area dates to at least 9,000 years B.P. and is associated with a period known as the Millingstone Cultural Horizon (Wallace 1955; Warren 1968). Millingstone populations established permanent settlements that were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone occupations dating later than 5000 B.P. contain a mortar and pestle complex as well, signifying the exploitation of acorns in the region.

Although many aspects of Millingstone culture persisted, by 3500 B.P., a number of socioeconomic changes occurred (Erlandson 1994; Wallace 1955; Warren 1968). These changes are associated with the period known as the Intermediate Horizon (Wallace 1955). Increasing population size necessitated the intensification of existing terrestrial and marine resources (Erlandson 1994). This intensification was accomplished in part through use of new technological innovations such as the circular shell fishhook on the coast, and in inland areas, use of the mortar and pestle to process an important new vegetal food staple, acorns; and the dart and atlatl resulting in a more diverse hunting capability. Evidence for shifts in settlement patterns has been noted as well at a variety of locations at this time and is seen by many researchers as reflecting increasingly territorial and sedentary populations. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended.

The Late Prehistoric period, spanning from approximately 1500 years B.P. to the Spanish mission era, is the period associated with the florescence of contemporary Native American groups. The northern San Fernando Valley was the northernmost extent of the territory occupied by people whom the Spanish referred to as the Fernadeño, whose name was derived from nearby Mission San Fernando. The Fernadeño spoke one of four regional Uto-Aztecan dialects of Gabrielino, a Cupan language in the Takic family, and were culturally identical to the Gabrielino. The Tataviam and Chumash, of the Hokan Chumashan language family, lived to the north and west of this territory, respectively, and it is likely that the territorial boundaries between these linguistically distinct groups fluctuated in prehistoric times (Bean and Smith 1978; Shipley 1978).

Prehistoric subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith 1978; Reid 1939 [1852]). The primary plant resources were the acorn, gathered in the fall and processed with mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry (Reid 1939 [1852]).

Ethnographic Overview

Occupying the southern Channel Islands and adjacent mainland areas of Los Angeles and Orange counties, the Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith 1978). The Gabrielino are estimated to have numbered around 5,000 in the pre-contact period (Kroeber 1925). Maps produced by early explorers indicate the existence of at least 40 Gabrielino villages, but as many as 100 may have existed prior to contact with Europeans (Bean and Smith 1978; McCawley 1996; Reid 1939 [1852]). Gabrielino villages are reported by early explorers to have been most abundant along the dominant rivers of the Los Angeles Basin, including the Los Angeles, San Gabriel, and Santa Ana Rivers.

Ten important villages were located within the San Fernando Valley, and the most populous of these was *Pasheeknga*, located near where Mission San Fernando was ultimately established (McCawley 1996:40). The community of *Achooykomenga* is thought to have been close to *Pasheeknga*, though the exact location has not been confirmed. Sétimo Lopez, a Fernadeńo informant who worked with ethnographer J.P. Harringon, reported that this settlement was located southwest of the Mission San Fernando, near a reservoir used to provide water to the mission. However, the dam constructed for the aqueduct and reservoir system for the mission is located approximately one mile northeast of the mission (McCawley 1996). *Achooykomenga* and *Pasheeknga* are located approximately 4 to 5 miles northeast of the project APE. The village of *Siutcanga* was located at Rancho El Encino, with parts of the site remaining at Los Encino State Historic Park, located a little over 4 miles southeast of the project APE. The Gaspar de Portola expedition is thought to have encountered *Siutcanga* in 1769, where they were greeted by a large gathering of Gabrielino people. This village was occupied as early as 5000 B.C. and includes a cemetery with both human and animal burials (McCawley 1996: 38).

Traditionally, the Gabrielino community was organized into lineages made up of multiple families. These groups would maintain permanent territories which exhibited primary villages with multiple seasonal settlements and temporary use sites for ritual practice, plant gathering, or hunting. Settlement and subsistence strategies varied across environmental zones which extended from islands and the coast to mountainous regions and inland valleys. Generally, families would gather together at the primary village in winter months and disperse to smaller camps throughout the year to take advantage of seasonally available plant and animal resources.

Most villages exhibited a *yovaar*, a religious structure with an open courtyard and ritual structures surrounded by brush fencing, near the center of the camp. The houses belonging to elite members of society were placed near the *yovaar*, with homes for other members of the village located further out. Sweat huts were located near streams or springs. Windbreaks, raised granaries, playing fields, and burial grounds were also common components of a village.

Material culture, such as tools, clothing, adornments, and other objects, were made with expert craftsmanship and artistry. Common objects found in the home might include numerous types of cooking, gathering, and storage baskets, steatite comals and cooking pots, portable milling equipment, wooden cooking implements, shell spoons, and numerous pottery vessels. Bone saws and awls, shell fishhooks, needles, and awls, stone knives and drills were also important implements in daily life. Wooden war clubs, self and sinew backed bows, simple and compound arrows, and slings were used for hunting and in fighting (Bean and Smith 1978).

Other principal aspects of Gabrielino culture included intra and intergroup exchange and large- and small-scale fighting. Several trails commonly used by the Gabrielino and their neighbors, such as the Chumash, Tataviam, and Serrano, have been documented around San Fernando Valley. These routes likely served as the foundation of roads, highways, and railroads which developed through time following the colonization of the region by the Spanish (Davis 1961). The Gabrielino maintained rich religious and ceremonial traditions that incorporated creation stories, puberty rituals, shamanism, taboos, mortuary rituals, and annual celebrations (Bean and Smith 1978). Following the establishment of the mission system and the coerced participation in new economic and social structures, Gabrielino people and their neighbors engaged in active and passive forms of resistance to maintain connections to their families, language, and traditions (Castillo 2021).

Historic Overview

Spanish explorers made brief visits to Gabrielino territory in both 1542 and 1602, and on both occasions the two groups exchanged trade items (McCawley 1996). Sustained contact with Europeans did not commence until the onset of the Spanish Period, which began in 1769 when Gaspar de Portola and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. Mission San Fernadiño Rey de España, the seventeenth of the 21 Franciscan missions in Alta California, was founded on September 8, 1797 and completed less than a year later. Its location, approximately 5 miles northeast of the project APE, was chosen as a stopping point between Mission San Gabriel and Mission San Buenaventura and prospered by selling cattle hides and tallow and various fruit crops to the nearby Pueblo of Los Angeles (Wright 1992). Agriculture was made possible in the relatively dry area through the construction of a stone masonry dam in 1808, bringing water from the mountains to mission vineyards by way of a 1.3-mile-long aqueduct, completed in 1811.

By the early 1800s, the majority of the surviving Gabrielino population had entered the mission system. Mission life offered the Indians security in a time when their traditional trade and political alliances were failing and epidemics and subsistence instabilities were increasing (Jackson 1999). This lifestyle change also brought with it significant negative consequences for Gabrielino health and cultural integrity.

Alta California became a state, with its capital at Monterey, when Mexico won its independence from Spain in 1821. The authority of the California missions gradually declined, culminating with their secularization in 1834. Although the Mexican government directed that each mission's lands, livestock, and equipment be divided among its converts, the majority of these holdings quickly fell into non-Indigenous hands. Mission buildings were abandoned and quickly fell into decay. Although mission life was difficult for Native Americans, secularization was typically worse. After two generations of dependence on the missions, they were suddenly disenfranchised. After secularization, "nearly all of the Gabrielinos went north while those of San Diego, San Luis, and San Juan overran this county, filling the Angeles and surrounding ranchos with more servants than were required" (Reid 1977 [1851]:104). Upon his 1852 visit to Los Angeles, John Russel Barlett wrote,

> I saw more Indians about this place than in any part of California I had yet visited. They were chiefly mission Indians, i.e., those who had been connected with the missions and had derived their support from them until the suppression of those establishments. They are a miserable, squalid-looking set, squatting or lying about the corners of the streets with no occupation. They have no means of obtaining a living, as their lands are taken from them, and the missions for which they labored and which provided after a sort for many thousands of them, are abolished (as cited in Sugranes 1909:77).

The first party of United States (U.S.) immigrants arrived in Los Angeles in 1841, although surreptitious commerce had previously been conducted between Mexican California and residents of the U.S. and its territories. Included in this first wave of immigrants were William Workman and John Rowland, who soon became influential landowners. As the possibility of a takeover of California by the U.S. loomed large, the Mexican government increased the number of land grants in an effort to keep the land in the hands of upper-class Californios like the Domínguez, Lugo, and Sepúlveda families (Wilkman and Wilkman 2006:14–17). Governor Pío Pico and his predecessors made more than 600 rancho grants between 1833 and 1846, placing most of the state's lands into private ownership for the first time (Gumprecht 1999). Alta California Governor Pio Pico sold the San Fernando Valley to Eulogio de Celis for $14,000 around this time. Having been established as a pueblo, property within Los Angeles could not be dispersed by the governor, and this task instead fell under the city council's jurisdiction (Robinson 1979).

The U.S. took control of California after the Mexican–American War of 1846, and seized Monterey, San Francisco, San Diego, and Los Angeles (then the state capital) with little resistance. Local unrest soon bubbled to the surface, and Los Angeles slipped from U.S. control in 1847. Hostilities officially ended with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the U.S. agreed to pay Mexico $15 million for the conquered territory, which included California, Nevada, and Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. The conquered territory represented nearly half of Mexico's pre-1846 holdings. California joined the U.S. in 1850 as the thirty-first state (Wilkman and Wilkman 2006:15).

The discovery of gold in northern California led to an enormous influx of American citizens in the 1850s and 1860s, and these settlers rapidly displaced the old rancho families. In 1873, the U.S. government confirmed legal title to old Rancho ex-Mission San Fernando at 116,858.43 acres, the largest private land parcel in California. The Southern Pacific Railroad extended its line from San Francisco to Los Angeles in 1876, passing through the San Fernando Valley via a new tunnel through Newhall Pass. Newcomers continued to pour into Los Angeles, and the population nearly doubled between 1870 and 1880. The completion of the second transcontinental rail line, the Santa Fe, took place in 1886 causing a fare war which drove fares to an unprecedented low. More settlers continued to head west, and the demand for real estate skyrocketed. The city's population rose from 11,000 in 1880 to 50,000 by 1890 (Meyer 1981:45).

At the beginning of the twentieth century, the pace of development within the Los Angeles Basin was stifled due to a limited water supply. Under the direction of city engineer William Mulholland, the Los Angeles Bureau of Water Works and Supply constructed the 238-mile-long Los Angeles Aqueduct. This 5-year project, completed in 1913, employed the labor of over 5,000 men and brought millions of gallons of water into the San Fernando Reservoir. During the first 3 decades of the twentieth century, more than 2 million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area (Gumprecht 1999).

The beginning of the twentieth century saw the florescence of a uniquely suburban metropolis, where a vast network of residential communities overshadowed city centers, where the single-family home was valued over the high-rise, and where private space took precedence over public space (Hawthorne 2006). This landscape demanded an innovative transportation solution, and Los Angeles embraced automobiles and freeways like no other city had. The first homemade car puttered down city streets in 1897. Seven years later, the first grand theft auto was reported by Los Angeles Police (Wilkman and Wilkman 2006:50). Inexpensive automobiles gained popularity in the 1920s, soon creating tremendous congestion in the centers of cities and necessitating alternate transportation routes. The Arroyo Seco Parkway, connecting Los Angeles to Pasadena, was among the earliest "express auto highways" in the U.S., opening in December 1940 (Balzar 2006). Dozens of freeways were constructed in the post-World War II years, radically altering the character of Los Angeles by simultaneously dividing local neighborhoods and connecting outlying communities. By 1945, Los Angeles had undertaken 95 annexations, expanding from a 28-square-mile agrarian pueblo into a densely populated city covering more than 450 square miles (Robinson 1979:245).

History of Project Site

San Fernando Valley

Mission San Fernando Rey de España was founded by Fermín Francisco de Lasuén, Junipero Serra's successor, in 1797. The mission was established midway between San Gabriel and San Buenaventura missions. The placement of Mission San Fernando, and missions in Alta California in general, was far from incidental because Franciscans carefully selected spaces with ample room for agriculture, access to water, and nearby sizeable Native American populations (Gentilcore 1961), which were needed in order to first erect the mission and then maintain an eventual mission system.

Under the direction of Father Francisco Dumetz and Father Juan Cortés, Native Americans built an adobe church, a storeroom, a weaving room, and a granary within 1 year of the mission's founding. Larger churches to accommodate the increasing numbers of Native Americans were built in 1800 and 1806 (MacMillan 1996). Construction efforts were not simply large scale, but also scaled down in the quotidian production activities at Mission San Fernando. Native Americans produced shoes and saddles from the extensive mission cattle. Rawhides were also used in the architectural construction of the mission as they were used to hold boards together. Native Americans also produced cloth, brick, tile, soap, olive oil, and wine. The Mission also had a blacksmith shop where Native Americans fashioned iron tools and plows (MacMillan 1996). The new work schedules at Mission San Fernando undoubtedly contrasted to how time was perceived and made use of by the Gabrielinos and Chumash before Spanish contact. MacMillan (1996) notes that many Native Americans at Mission San Fernando rebelled by refusing to work or by working slow. It was also common for Native Americans to flee from the missions.

Native Americans at Mission San Fernando also produced art. The fathers at Mission San Fernando selected certain Native individuals to paint murals and decorate doorways and windows with designs (Phillips 1976). The paintings have been dated to 1806-07 and have been attributed to Juan Antonio. According to Mission San Fernando records, a Juan Antonio was baptized at the mission in 1798. Phillips (1976) deduced that Juan Antonio was unlikely a child when he was baptized in 1798 because it was improbable that mission officials would delegate such an artistic endeavor to a child. Juan Antonio must have entered the mission system at a later age and therefore with memories, understandings, and practices of a pre-contact Native American way of life (Phillips 1976).

The San Fernando Valley mission life, in particular, was not immediately affected in 1822 when New Spain gained its independence from Spain. In 1822, there were 1,001 indigenous individuals living within the mission. Native Americans continued agricultural work and cultivated wheat, barley, corn, beans, and peas. They also tended to their fruit trees, cattle, horses, and sheep, and vineyards (Robinson 1942). In 1834, though, the desecularization mission of post-Independence Mexico reached the San Fernando Mission (Robinson 1942). Secularization brought about a progressive deterioration at Mission San Fernando. Annual losses in farming were recorded and the Indigenous population also increasingly drifted away from the mission center (Robinson 1942; 1963). With the decline of mission life, the physical mission itself, the symbol of centrality, also dissolved and Native Americans that had remained in the area disbanded.

The new republic was characterized by chaotic rule. This characterization did not circumvent Alta California and added to the post-Mexican independence social cataclysm. In California, the disorder was witnessed in the dozen governors that ruled in the 26 years following independence and in the several uprisings that took place. Two of these rebellions took place near the Cahuenga Pass (Link 1991). In 1831, Jose Carillo and Abel Stearns battled the governor, Manuel Victoria, near the pass. Soon after the skirmish, Victoria resigned. In 1845, then Governor Manuel Micheltorena was met by a band of 284 rebels led by Juan Bautista Alvarado and Jose Castro. Peace was negotiated, and a governor resigned from office again. Micheltorena was followed by Pio Pico, the last governor under Mexican rule (Link 1991).

Amid the rebellions, gold was discovered in 1842, north of the ex-Mission San Fernando in Placerita Canyon. The discovery of gold prompted the migration of many prospectors who worked the canyon for several years and yielded $6,000 to $8,000 per year (Robinson 1942).

The Mexican-American War was yet another circumstance that added to the San Fernando Valley’s early nineteenth century turmoil. In 1846, the Mexican government authorized Pio Pico to take any steps necessary to protect Alta California from American invasion. Consequently, Pico sold the greater part of what was referred to as “Rancho Ex-Mision de San Fernando” in 1846 for $14,000. More than 116,000 acres was sold to a native of Spain, Eulogio de Celis. With the exception of Rancho Encino, Rancho El Escorpion, and a few hundred acres around the mission, de Celis nearly purchased the entire valley. This sale effectively marked the valley’s transition to private ownership. In addition to payment, de Celis agreed to tend to the aging Native Americans on his newly acquired land and their respective agricultural autonomy.

The Mexican-American War terminated in Alta California with the Treaty of Cahuenga. The agreement was signed in the San Fernando Valley on January 13, 1847. Andres Pico and John C. Fremont, along with five men from each side, signed the treaty.

In 1852, de Celis filed a claim with the Board of Land Commission, a board specifically created by Congress to investigate Spanish and Mexican land titles in their newly acquired territories. The divergent Mexican and American legal as well as social practices often clashed in these investigations. These proceedings were also stagnant processes. For example, although de Celis’ proprietary rights were validated by the Board after his appeal (Link 1991), it was not until 1873 that the U.S. District Court upheld the Board’s findings (Robinson 1942).

De Celis, though, returned to Spain in 1853. His lessee (and later part owner), Andres Pico, remained at Rancho Ex-Mission of San Fernando and occupied the former mission buildings. In 1862, Andres Pico transferred his interests in the San Fernando Rancho to his brother, Pio. On July 2, 1869, Pio Pico once again sold the land. This time, however, the sale excluded certain areas such as 1,000 acres near the mission. Pico in turn used the money to build a hotel in Los Angeles which stands today, the Pico House. The sale was made to the San Fernando Homestead Association which was headed by Isaac Lankershim and I.N. Van Nuys. The Association fought the heirs of Eulogio de Celis in court and in 1871, the District Court granted the Association full title to the southern portion of the valley. Under the administration of Lankershim and Van Nuys, the southern portion of the valley focused on wheat farming.

The northern portion was bought by George K. Porter and Charles Maclay from Eulogio de Celis' son in 1874. Also in 1874, Maclay registered the city of San Fernando with the County Recorder in Los Angeles. He presented a map depicting streets, blocks, and several thousand 25-foot lots. The Southern Pacific Railroad extended from Los Angeles to the new city and essentially helped colonize it. The Southern Pacific Railroad offered passengers from Los Angeles to San Fernando half-rate if they traveled with the intention to purchase lands (Keffer 1934; Robinson 1942). The novelty of a new city created a tourist attraction. Having a leisurely lunch at the old mission (Robinson 1942) likely aided in constructing a tourist attraction as feelings of charm, fantasy and exoticism were created by the aged mission. Affective qualities were also likely drawn from the new city's comparison to the clamor of Los Angeles. San Fernando, its mission and its quiet and calm, represented a time and space gone by. San Fernando was thus packaged and consumed at $10 to $25 for each town lot or $5 to $40 per acre for farming lands (Robinson 1942).

However, the San Fernando Valley was not simply a romanticized, remote oasis. In addition to having Los Angeles readily accessible in 1874 through the Southern Pacific Railroad line, in just 2 years the San Fernando Valley was connected to San Francisco. With Chinese men as the primary labor, the San Fernando Tunnel was completed in a near 16-month construction feat in 1876 (Robinson 1942; 1961).

In addition, the valley experienced a real estate boom from 1887 to 88, and its immense fertile lands lured residents and developers. The Lankershim Ranch Land and Water Company purchased the eastern 1,200 acres of the southern half of the Rancho Ex-Mission of San Fernando from the Los Angeles Farm and Milling Company (formerly known as the San Fernando Homestead Association mentioned above). These acres were subdivided by the company in 10- to 40-acre parcels that sold for $5 to $150 each. In the northern half of the valley, land was also purchased for subdivision, and once again the San Fernando Valley was packaged and sold on the real estate market as a fertile agriculture endeavor. However, this agronomic promise was also a reality. The wheat-producing business that was pioneered by Lankershim and Van Nuys in the early 1870s had become a production machine by the late 1800s. Flour milling was supplemented to wheat farming; in 1888, 510,000 bushels of wheat were produced and milled by the Los Angeles Farm and Milling Company (Robinson 1961).

Another critical moment in the valley's history came in 1913 when the irrigation plan proposed by Los Angeles mayor, Fred Eaton, and Los Angeles water department engineer, William Mullholand, took its material form. The Los Angeles Aqueduct brought water from the Owens Valley in the High Sierra to Los Angeles. In order to take advantage of the water supply for the dry farming area, the various valley communities agreed to be annexed by Los Angeles at different times from 1915 to 1923 (Robinson 1963).

Zelzah

The story of the project site is one of ranching interrupted by the sudden early twentieth century growth of the San Fernando Valley. The project APE lay in the Ex-Mission de San Fernando land grant, approximately 5 miles southwest of the mission itself and approximately 2.5 miles northwest of Rancho El Escorpion. In 1887, Henry Hubbard and Bud Wright purchased the 1,100-acre segment that included the project APE, an area known as Hawk Ranch, from Benjamin Porter, the brother of George Porter. Hubbard and Wright farmed the land until 1910, when they sold it to the Valley Farm Company for subdivision (San Fernando Valley Magazine 1975).

A small settlement, still mainly a farming community, grew up on the ranch. The Hubbards and Wrights were early members of the San Fernando Methodist Church, and it is said, "It was a hot, dusty ride from the church in town to their quiet home, so Mrs. Wright, who was a diligent Bible student, renamed their ranch Zelzah Ranch from a Bible name meaning 'a place or rest'" (Hume 1931:4). Others claim she believed the name was "a Biblical name for oasis, or 'watering place in the desert'" (San Fernando Valley Magazine 1975:7). The name Zelzah actually derives from shadow and seems to mean a shady place; it is mentioned only once in the Bible and is described as near the location of Rachel's Tomb (I Samuel 10:2; Strong 2007:1564). But the name is so unfamiliar to Western ears that later authors believed it must be of Native American derivation. Conflating the incorrect designation of the Hebrew name to mean oasis, with the assumption that the odd word must be Native American, some authorities have gone so far as to state, "The Shoshone word zelzah ('oasis' or 'spring') seems to have been used to describe the springs and vegetation marking the beginning of the Los Angeles River" (Hoover et al. 1990). Regardless of its origin, the community took the name of the Hubbard-Wright Ranch, Zelzah.

About 1906, the Southern Pacific Railroad moved its location to take advantage of the Chatsworth rock quarries, passing through the community in the process. Zelzah became the only Southern Pacific Railroad stop in the valley. The railroad became the center of the community. The depot was located southeast of the intersection of Reseda Boulevard and Parthenia Street, approximately 0.5 miles north of the project site. The depot was torn down in 1961, but the tracks remain active (San Fernando Valley Magazine 1975).

The community remained rural and semi-rural until World War II. Farming and ranching remained important to the local economy. The community thrived on its proximity to Hollywood and its Old West image. During this time, the region was particularly popular with members of the film industry, who maintained horse ranches in and around Zelzah. It regularly held rodeos and horse shows, calling itself the "Horse Capitol of California" (San Fernando Valley Magazine 1975). Moreover, the San Fernando Valley was the egg basket of Los Angeles. The Runnymede Poultry Colony was established in nearby Reseda in July 1927, and grew to include 80 acres and $1,000,000 worth of buildings to the south and east of the project APE. In 1929, the colony was the largest poultry plant in the world, employing 60 people and producing 2,000,000 eggs per month (Van Nuys News 1929).

The community was annexed to Los Angeles in 1915. It changed its name twice, first to North Los Angeles in 1929 and then, to Northridge Village or Northridge in 1938 (San Fernando Valley Magazine 1975).

Northridge came into its own as an urban extension of Los Angeles after World War II. After the war, the community underwent massive growth. The small farms and ranches were quickly carved up and built upon. The equestrian culture of the valley was maintained in nearby Pierce College, but was no longer prominent in Northridge itself. The project APE was part of this development and experienced a rapid growth of houses and commercial buildings after the War. Of note, the Northridge Medical Center broke ground on its facility located on the corner of the intersection of Reseda and Roscoe Boulevards in 1954, and opened its doors on September 18, 1955. Its 49 beds were already inadequate for the growing San Fernando Valley, and a second 50-bed wing was opened in 1958 (HealthSpeak 2006).

Archival Research

As part of this cultural resources assessment, an archival research program was conducted. The purpose of this research is to identify known cultural resources in the project APE, provide context for the evaluation of cultural resources within this area that are 45 years or older, and inform interpretations regarding the potential to encounter previously unidentified cultural resources in the course of ground-disturbing work associated with the proposed project. A brief discussion of previously documented tribal cultural resources is provided to examine the potential of the project to impact resources which may hold significance to the California Native American community. Additionally, a review of geological maps and literature was conducted to determine the paleontological sensitivity within the project APE. The results of this archival research are present below.

Archaeological/Built Environment Resources
Archival research included a records search at the South Central Coastal Information Center (SCCIC), a review of local cultural resource registers, and review of local and regional historical maps. Supplemental research in published and unpublished sources was also conducted to provide prehistoric and historic contexts for the project area.

Archival research of the APE was conducted in May 2021 at the SCCIC housed at California State University, Fullerton. Due to COVID-19 pandemic restrictions, the SCCIC is conducting all records searches internally and focused on the identification of previously recorded cultural resources and cultural resources reports within the study area, which comprises the project APE and a 0.5-mile buffer. Additional archival research was conducted by AECOM archaeologist Allison Hill, M.A., RPA, and included a review of SCCIC-provided site records and report data, historical site and property inventories, and historical maps. Inventories of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California State Built Environment Resource Directory (BERD), California Historical Landmarks and Points of Interest, and the list of City of Los Angeles Historic-Cultural Monuments (LAHCMs) were also reviewed to identify cultural resources within the study area.

Previous Cultural Resources Investigations Reports

The records search revealed that 23 cultural resources investigations were previously conducted within a 0.5-mile radius of the APE (Table 1). One of these studies (LA-11606) overlaps the project footprint. These studies include cultural resources assessments and a monitoring report. Much of the work completed in the records search area consisted of records searches and site visits for telecommunication candidate locations. In total, less than 5 percent (%) of the project APE and approximately 10% of the study area have been subject to previous cultural resource investigations.

Table 1. Previous Investigations Conducted within 0.5 Mile of the Project APE

Author	**Report Number**	**Description**	**Date**
Dames and Moore	LA-00160	Phase 1 Cultural Resources Survey Fiber Optic Cable Project Burbank to Santa Barbara, California for US Sprint Communications Company	1988
Peak and Associates, Inc.	LA-02645	Class 3 Cultural Resource Assessment of the Proposed Carpinteria and Southern Reroutes, Santa Barbara, Ventura, and Los Angeles Counties, California	1991
Anonymous	LA-02950	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	1992
Romani, Gwendolyn R.	LA-04162	Results of Phase 1 Archaeological Survey Located at 7915 Lindley Avenue, Reseda, Los Angeles County, California	1998
Duke, Curt	LA-05050	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 187-01, County of Los Angeles, California	1999
Duke, Curt	LA-05057	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 113-02, County of Los Angeles, California	1999
Anonymous	LA-06143	Expansion of Grover Cleveland High School Facilities Located at 8140 Vanalden Avenue, Northridge, California.	2002
Foster, John M.	LA-06599	Historic Resource Evaluation Report Mason Avenue At-grade Crossing and Safety Improvements Project Los Angeles City, California	2002
Duke, Curt	LA-06760	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 187-02 County of Los Angeles, California	2002
McKenna, Jeanette A.	LA-06767	Review of Cultural Resource Assessment for Nextel Communications Site CA-6870g, Reseda, Los Angeles County, California (19323 W. Lanark Street)	2002

Author	Report Number	Description	Date
Bonner, Wayne H. and Christeen Taniguchi	LA-07276	Records Search Results and Site Visit for Sprint Telecommunications Facility Candidate La60xc514a (AT&T/Gil's Muffler) 18437-1/2 Roscoe Boulevard, Reseda, Los Angeles County, California	2004
Pletka, Nicole and Marvin, Judith	LA-08192	Cultural Resource Assessment Cingular Wireless Facility No. Vy 363-02 Reseda, Los Angeles County, California	2004
Bonner, Wayne H.	LA-08193	Cultural Resources Records Search Results and Site Visit for Cingular Wireless Candidate Nl-034-03 (Jon's Market), 20151 Roscoe Boulevard, Winnetka, Los Angeles County, California	2005
Bonner, Wayne H.	LA-08195	Cultural Resources Records Search Results and Site Visit for Cingular Wireless Site Nl-034-02 (sprint Monopole), 20160 Roscoe Boulevard, Winnetka, Los Angeles County, California	2005
Bonner, Wayne H.	LA-08200	Indirect APE Historic Architectural Assessment for Sprint Telecommunications Facility Candidate La60xc514a (AT&T/Gil's Muffler) 18437-1/2 Roscoe Boulevard, Reseda. Los Angeles County, California	2004
Arrington, Cindy and Nancy Sikes	LA-08255	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and II	2006
Bonner, Wayne H.	LA-08689	Cultural Resources Records Search and Site Visit Results for Global Tower Partners Telecommunications Facility CA-5005 (Balboa), 8200 Balboa Boulevard, Van Nuys, Los Angeles County, California	2006
Bonner, Wayne H.	LA-09340	Updated Cultural Resources Records Search and Site Visit for Global Tower, LLC, Candidate CA-5005 (Balboa), 8200 Balboa Boulevard, Van Nuys, Los Angeles County, California	2008
Bonner, Wayne H.	LA-09503	Cultural Resources Records Search and Site Visit Results for T-Mobile Candidate SV11682A (Balboa Public Storage-Global Towers), 8200 Balboa Blvd, Van Nuys, Los Angeles County, California	2008
Bonner, Wayne	LA-10666	Cultural Resource Records Search and Site Visit Results for T-Mobile USA Candidate SV12176A (Hope Chapel), 7930 Mason Avenue, Canoga Park, Los Angeles County, California	2010
Bonner, Wayne	LA-10927	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate SV12452-A (Mason & Parthenia JPA), 8601 Mason Avenue, Winnetka, Los Angeles County, California	2011
Maxon, Patrick	LA-11606	Phase I Cultural Resources Assessment, Sylmar Ground Return Replacement Project, Los Angeles County, California	2011
Kry, Linda and Marc A. Beherec	LA-13255	Draft, Reseda Boulevard Pipeline Project, Phase I Archaeological Assessment, Los Angeles County, California	2013

Previously Recorded Cultural Resources

The SCCIC records search identified four previously recorded cultural resources mapped within 0.5 miles of the project APE (Table 2). Resources include one prehistoric isolate, one commercial property, one residential property, and one church. None of the resource sites are located in the project APE.

BERD

Study of the State of California Office of Historic Preservation's BERD focused on properties adjacent to streets within the APE, specifically Roscoe Boulevard and Reseda Boulevard. Two properties are listed in the BERD for Roscoe Boulevard and Reseda Boulevard within 0.5 miles of the project APE (Table 3).

Table 2. Previously Recorded Cultural Resource Sites within 0.5 Mile of the Project APE

Primary Number (P-19-)	Historic Name/Description	Time Period	Eligibility Evaluation*
001026	Prehistoric isolate	Prehistoric	Not Evaluated

Primary Number (P-19-)	Historic Name/Description	Time Period	Eligibility Evaluation*
187333	Gil's Muffler Shop commercial property	Historic (1955)	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or local listing.
187334	Single story residential building	Historic (1952)	Not eligible for NR, CR, or local listing
188879	Hope Chapel	Historic (1948)	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or local listing.

**NR = National Register; CR = California Register*

Note: The prehistoric isolate (P-19-001026) consists of a fused shale projectile point fragment encountered in 1966 during gardening activities near the northeastern corner of the intersection of Roscoe Boulevard and Oakdale Avenue. The site record indicates the yard where the artifact was found showed no other signs of occupational debris but notes that the area was highly developed.

Table 3. BERD Properties Adjacent to the Project APE

Primary Number (P-19-)	Name	Street Address	Date	Evaluation Status
187333	Gil's Muffler	18437 Roscoe Boulevard	1955	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.
--	Coral Wood Apts	8025 Reseda Boulevard	1963	Determined ineligible for NR by consensus through Section 106 process – Not evaluated for CR or Local Listing.

California Historical Landmarks

California Historical Landmarks are buildings, structures, sites, or places that have been determined to have statewide historical interest. A search of the California Historical Landmarks list revealed no California Historical Landmarks within 0.5 miles of the project APE.

LAHCMs

LAHCMs are sites in Los Angeles that have been designated by the Los Angeles Cultural Heritage Commission. A search of the LAHCMs found no monuments within 0.5 miles of the project APE.

Los Angeles Historic Resources Inventory

The City of Los Angeles has conducted a comprehensive survey to identify significant historic resources under the SurveyLA program. The historic resources identified in the historic survey have been mapped on HistoricPlacesLA, an interactive map that depicts the Los Angeles historic resources inventory including LAHCMs, Historic Preservation Overlay Zones, and resources identified as eligible for listing on local, state, or federal registers through the SurveyLA program. The data available in the HistoricPlacesLA inventory are updated as additional resources are identified and evaluated for areas not covered by SurveyLA. A search of resources in this database was limited to properties adjacent to streets within the project APE, including Roscoe Boulevard and Reseda Boulevard. Three historic resources were identified on the Los Angeles Historic Resources Inventory (Table 4).

Table 4. Los Angeles Historic Resources Inventory Properties Adjacent to the Project APE

Primary Number (P-19-)	Name	Street Address	Date	Evaluation Status
--	Lifehouse Church	18355 West Roscoe Boulevard	1964	Appears eligible for NR, CR, or Local Listing or designation through SurveyLA or other survey evaluation
--	Rydell Cadillac	8400 North Reseda Boulevard	1965	Appears eligible for NR, CR, or Local Listing or designation through SurveyLA or other survey evaluation. This building has since been demolished but currently remains on the Los Angeles Historic Resources Inventory.
--	Jolly Jug Liquor Sign	8464 North Reseda Boulevard	1960	Appears eligible for Local Listing or designation through SurveyLA or other survey evaluation

Historical Maps and Aerial Photographs

Historical map research was conducted in order to understand past land use and disturbance and to identify possible locations of archaeological sensitivity within the project APE. United States Geological Survey (USGS), Sanborn Fire Insurance, and Baist Real Estate maps were consulted.

No Sanborn maps for the project APE were identified in the course of this archival resource. The project APE was mapped on Plate 47 from the 1921 Baits Real Estate Map catalog. The northern side of Roscoe Boulevard between Mason Avenue and Tampa Avenue is mapped as Ex Mission San Fernando though no structures are present along Roscoe Boulevard in this vicinity. Water pipes are mapped crossing Roscoe Boulevard at Winnetka, Corbin, and Tampa Avenue, which transect the Ex Mission San Fernando property and border the Porter Est Co. The northern side of Roscoe Boulevard from Tampa Avenue to the area between Lindley and White Oak Avenues is mapped as the City of Zelzah with about five structures mapped in parcels facing Roscoe Boulevard. Reseda Boulevard runs north-south through Zelzah and has several structures on the eastern and western sides of the street. The northwestern area adjacent to the proposed project along Reseda Boulevard from Chase Street to Bryant Street is mapped as the Faris N TR which exhibits a few structures, though none appear to be located along the project APE. South of Zelzah between Tampa Avenue and Reseda Boulevard is T.R. 1875 which has been subdivided into small lots, but only a few structures are present in the tract and they are not near Roscoe Boulevard. No other structures appear to be mapped along Roscoe Boulevard at the time of this map.

The earliest USGS topographic map, the 1903 Calabasas, California 1:625000 map, shows that Roscoe Boulevard has not been constructed yet, and the area long the majority of the east-west project alignment is completely undeveloped. Reseda Boulevard appears present with a few buildings located in proximity to where the street intersects with modern day Roscoe Boulevard.

By the 1928 Zelzah, California 1:24000 map, Rosco and Reseda Boulevards have been built, along with other major intersecting streets (Mason, Winnetka, Corbin, Wilbur, Lindley, and Balboa Avenues). The Southern Pacific Railroad is present north of the proposed project APE, cutting through the heart of Zelzah. Many buildings are scattered along Reseda Boulevard with a few present in other areas. There appears to be the start of some housing developments southwest of the project site, mapped as the Weeks Poultry Colony. Aliso Canyon wash was established between 1903 and 1928.

The 1932 Zelzah, California 1:24000 map depicts the Runnymede Poultry colony located on the southern side of Roscoe Boulevard at Lindley Avenue. Increased development of houses and streets is evident between 1928 and 1932, though the area appears primarily agricultural.

The 1941 Zelzah, California 1:24000 and 1944 Calabasas, California 1:62500 maps depict slow and steady development of properties that face the project APE.

The 1952 Canoga Park, California 1:24000 map no longer exhibits the poultry colony on the southern side of Roscoe Boulevard. More homes and businesses have been built in the area surrounding the project site, with development focused north and south of the project alignment and only limited development along the project APE alignment itself.

Two aerial photographs of the project area were accessible on the University of California Santa Barbara Library (UCSBL) Geospatial Database, one from 1928 (UCSBL 1928) and one from 1960 (UCSBL 1960). The aerial images support the archival map research. In 1928, the region is predominantly agricultural with a few homes, farms, agricultural fields, and orchards checkering the landscape. There is limited development along Roscoe Boulevard which appears to consist predominantly of single homes or farming infrastructure. By 1960, Reseda Boulevard is lined with commercial buildings, and the northern side of Roscoe Boulevard is lined with single-family homes and a few commercial buildings. The southern side of Roscoe Boulevard exhibits mixed-use with single-family homes, agricultural lands, and some industrial or commercial properties.

Tribal Cultural Resources

Tribal cultural resources are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. In addition, tribal cultural resources are either included or determined to be eligible for inclusion in the California Register of Historical Resources (California Register), included in a local register of historical resources, or are determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to PRC 21074 (a)(1)(A)-(B). In addition to archaeological resources of Native American origin, tribal cultural resources may include but are not limited to waterways and bodies of water such as creeks, lakes, or springs; vegetation communities that have known traditional uses as food, medicine, or raw material for production of tools and crafts; locations of procurement for raw stone and minerals that were used to make tools, rock art, and other goods; trails and trade routes; and places or landscapes that are important to traditional cultural practices, regardless of the presence or absence of archaeological material culture. Initial consultation between LADWP and tribes with known affiliations to the area have identified a likelihood that tribal cultural resources could be present within the APE. This is based on the APE's position within or around the known traditional communities or settlements as well as other features such as trails, trade routes, and waterways. To further identify known or potential tribal cultural resources within the APE, a review of ethnographic literature, historic maps, archaeological resources, and the current and historic environmental settings was reviewed by AECOM.

The results of the SCCIC records search identified one prehistoric isolate (P-19-001026) in the west end of the records search area. Isolated artifacts are not typically considered significant or determined eligible for listing on state of local historic registers. A review of maps and ethnographic literature did not produce substantial evidence that this isolate may be interpreted as or related to a significant resource. The nearest documented villages include *Siutcanga*, approximately 4.3 miles southeast of the project APE, *Pasheeknga* located approximately 4.3 miles northeast, and *Achooykomenga* which may be approximately 5 miles north of the project APE (McCawley 1996). However, the full extent and exact location of these villages are not currently well defined.

The APE was assessed for natural resources and landscape features which may be of interest to the Tribal community. The APE has been subject to decades of development and little remains of the flora or fauna endemic to the region. Historically there were likely patches of useful plant resources in the area, but none now remain to indicate what type of gathering or processing activities may have been undertaken by tribes in the APE. No known tool stone outcrops or mineral deposits were identified in the course of this investigation. Historic maps show several waterways draining into the vicinity of the APE, most notably Aliso Creek, Browns Canyon Wash, and Limekiln Canyon Wash. Though these tributaries of the Los Angeles River have been channelized, historically they would have provided sources of fresh water that create ideal conditions for certain plant resources and local fauna. Temporary camps and activity areas were also commonly established near reliable sources of fresh water. While no known such sites have been identified in the vicinity, the presence of washes and drainages in the APE indicate the potential for encountering tribal cultural resources.

A review of maps depicting historical and ethnographic settlements and trails, as well as historic topographic maps which show landforms and hydrology was conducted to identify places where tribal cultural resources have the potential to be observed. A map of trails identified in ethnographic literature compiled by Davis (1961) does not depict any routes in proximity to the APE, with the closest north-south route located about seven miles east which is likely the El Camino Viejo a Las Angeles (Davis 1961:5). The *Kirkman - Harriman pictorial and historical map of Los Angeles County: 1860 A.D. 1937 A.D.* (1938) depicts a variety of historic settlements, trails, and geographic locations. This illustrative map places the estimated route of the Portola expedition about one mile east of the APE. A network of mission roads is depicted across the region, one of which bisects the APE. The map scale is fairly large at 1:200,000 and it is based off of historic maps and accounts. For this reason, it is useful in indicating Spanish period travel routes, likely based off of tribal trail networks, were present in the vicinity of the APE, though their exact location is difficult to verify. The 1877 *Map of the County of Los Angles, California: compiled from U.S. Land Surveys, records of private surveys, and from other reliable sources* depicts an overland stage route to the west of the APE and the 1898 *Official Map of the County of Los Angeles, California* does not depict any trails or travel routes in the vicinity of the APE. No historic trails or travel routes have been formally recorded within the APE.

Paleontological Resources

The project site is mapped as having surficial deposits of Quaternary alluvium and young alluvial fan deposits ranging in age from the Holocene and latest Pleistocene. The alluvial deposits consist of unconsolidated gravel, sand and silt from recently active streams and debris-flows. The young alluvial fan deposits are undivided, unconsolidated gravel, sand, and silt with boulders near the base of mountain fronts. Surfaces can show light to moderate pedogenic soil development. Along the east and west edges of the project APE are older young fan deposits which can be distinguished in some places based on relative terrace levels (Yerkes and Campbell 2005).

The surficial sediments of younger Quaternary alluvium are not likely to produce significant vertebrate fossils, though sensitivity increases with depth where earlier Pleistocene deposits may be encountered. No known fossilized vertebrate remains have been documented in the vicinity of the project APE. However, there are fossil localities nearby from the same sedimentary deposits that occur in the proposed project areas (Kry and Beherec 2013).

Fossil specimens of extinct peccary, ground sloth, camel, horse, and bison have been recovered from 20 to 80 feet below ground surface in other parts of the San Fernando Valley (Turner et al. 2019). Generally, paleontological sensitivity increases with depth, with older deposits exhibiting greater potential to yield fossil specimens. Ground-disturbing activities occurring at shallow depths, such as grading or trenching less than 5 feet below ground surface, are unlikely to encounter significant vertebrate fossil remains in the younger Quaternary alluvial and older young alluvial fan sediments that cover the project site. Excavations at greater depth increase the potential for encountering older Quaternary alluvial sediments, which have potential to yield fossil specimens (Kry and Beherec 2013).

Archaeological Survey

A field survey of the project area was conducted on August 11, 2021, by AECOM archaeologist Allison Hill, M.A., RPA. Ms. Hill meets the Secretary of the Interior's Professional Qualification Standards in Archaeology. Usually, a pedestrian transect survey of 15 meters or less is performed; however, because the APE is in highly developed neighborhoods where work will take place within existing paved roadways of the project APE, the archaeological survey consisted of a windshield survey along the project alignment. The windshield survey was supplemented with targeted examinations of locations identified during the windshield survey where the ground surface is visible. Only apparently undisturbed areas with the potential for ground-disturbing activities were surveyed during these targeted examinations. The purpose of the survey was to identify and record cultural resources that are at least 45 years old and evaluate any discovered resources for historical significance based on criteria for listing in the CRHR. The project APE was also examined for evidence of tribal cultural or paleontological resources.

The project APE has no soil visibility, as the APE is limited to the road right-of-way which is covered in asphalt (Plate 1). Previous ground disturbance likely encompasses 90% to 100% of the project APE due to road and utility construction. Landscaping greenbelts and small planters with grass, trees, and dirt were present adjacent to long swaths of Roscoe Boulevard (Plate 2) and Reseda Boulevard (Plate 3) on the sidewalk just outside of the APE. In the course of photographing the APE, targeted inspections of exposed soil in these landscaping features directly adjacent to the APE were performed to provide context for what may be expected below the road's ground surface. Throughout the examined areas, the soil is predominantly a light tan to yellow-brown, fine-grained silty sand. Modern plastic trash, broken glass, ceramic, and miscellaneous metal refuse were observed in these areas which also exhibited street-lights, power poles, and other utility structures which have impacted most of the soil, occasionally evidenced by fill gravel in the soil.

Plate 1: Overview of paved APE along Roscoe Boulevard near Mason Avenue (View: East)

Plate 2: Landscaped greenbelt along Roscoe Boulevard near Zelzah Avenue (View: West)

Plate 3: Overview of APE along Reseda Boulevard near Bryant Street with landscaping planter (View: South)

Archival research identified three historic builds or structures along the project alignment which were documented by SurveyLA as potentially eligible for listing in NRHP, CRHR, or local listing. In the course of this survey, the Lifehouse Church and Jolly Jug Liquor sign were observed in the same condition as previously documented. These resources appear to be located outside of the designated APE and will not be impacted as a result of the proposed project. In the course of the field survey, no archaeological or historical resources meeting the age criterion of 45 years or more, tribal cultural resources, or paleontological resources were identified in the APE.

Recommendations

The following section presents recommendations for further action regarding cultural resources within the project area. These recommendations are based on information collected from archival research, which examined records kept at the SCCIC, local cultural resource listings, historical maps, contemporary archaeological and ethnographic literature, local prehistoric land use patterns and resource availability, geological publications, tribal consultations in accordance with California Assembly Bill (AB) 52, and the results of the field survey. All of these investigations and resource documentation serve to inform the recommendations provided for cultural resources in the project area.

The sensitivity of the proposed project to encounter significant fossil remains appears low to moderate. Geologic maps indicate that the project APE lies within an area mapped as having surficial deposits of Quaternary alluvium and older young alluvial fan deposits. No known fossil speciments have been identified in the APE, however fossilized remians have been encountered in similar older quaternary alluvial deposits nearby. Soils at relatively shallow depths can reasonably be assumed to have been disturbed in the recent past by the cosntruction and maintenance of roads and utilities, as well as by natural weathering. Shallow excavations in the proposed project APE, those less than 5 feet in depth, are unlikely to yield intact fossils. The east and west ends of the project APE exhibit older young alluvial fan deposits from the late Pleistocene, and greater depths in the center of the APE may exhibit older Quaternary alluvial sediments. Deeper excavtions within the project APE, which may extend as far as 10 to 20 feet below surface, have low to moderate potential to encounter fossil deposts. Based on the results of archival research, no paleonotological monitoring is recommended at this time. If potential fossil remains are encountered by the proposed project, work will be temporarily halted in the vicinity of the find and LADWP will contact a qualified paleontologist to evaluate and determine appropriate treatment for the resource.

Based on the results of the archival research and survey, it is possible, but unlikely, that significant archaeological or tribal cultural resources will be encountered during ground-disturbing activities for the proposed project. The site is located within a heavily disturbed urban area. The primary roadways in the APE were initially developed in the early twentieth century and, by the mid-twentieth century, Roscoe Boulevard and Reseda Boulevard were well-developed transit routes lined with commercial and residential properties. In addition, numerous below-grade utilities have been installed throughout the entire APE. The process likely heavily impacted any prehistoric or early historic remains that may have existed in the APE prior to road development. Nonetheless, intact soils with cultural material do have potential to be encountered in the course of ground disturbing activities. One prehistoric isolate was encountered on a residential property adjacent to the western end of the APE but no additional traces of cultural material were observed. Based on the results of the archival research and cultural resources survey, there is low potential that archaeological resources will be encountered during ground-disturbing activities for the proposed project.

While no tribal cultural resources were identified in the course of this survey and the project APE is highly disturbed from decades of construction and utility installation, the potential exists to encounter previously unidentified tribal cultural resources. Historic maps identified travel routes in the vicinity of the APE which may have been developed from tribal trade routes. However, the scale of the maps was large, and the projections are not precise enough to say definitively that trails were present in the project area historically. Several water courses were also historically present in the area of the APE, including Aliso Creek, Browns Canyon Wash, and Limekiln Canyon Wash. These waterways have been diverted and channelized, but they would have created favorable conditions for native people to establish temporary camps or short-term use sites for resources acquisition or regional travel. These waterways have the potential to be identified as tribal cultural resources by consulting tribes. Ultimately, no specific evidence for tribal cultural resources as defined in PRC 21074 (a)(1)(A)-(B) has been identified. However, given the natural setting and known prehistoric, ethnographic, and historic land use patterns in the region, there exists the possibility of undiscovered resources which may be tribal cultural resources.

Because the potential to encounter archaeological or tribal cultural resources cannot be completely ruled out, the following recommendations are made.

A *Cultural Resources Awareness Training Best Management Practice* (BMP) shall be implemented as follows:

All field supervisors and all construction workers shall participate in training on cultural resources awareness prior to the initiation of construction on project sites that involve ground-disturbing activities. The training shall include a description of the types of cultural resources (including tribal cultural resources and human remains) that could inadvertently be encountered during ground-disturbing activities, the sensitivity of the resources, the legal basis for protection of the resources, and the penalties for unauthorized collection of or knowingly damaging the resources. The training shall address the proper procedures in the event of an inadvertent discovery of a cultural resource, including the immediate halting of work in the area of the discovery, notification of appropriate individuals of the discovery, the establishment of appropriate protective buffer zones around the discovery, and the continued avoidance of the protected area until the resource has been evaluated by qualified individuals and an appropriate treatment plan has been developed and implemented. These procedures shall be documented in a cultural resources monitoring and mitigation plan (CRMMP) that shall establish, in the event of inadvertent discovery of cultural resources, monitoring procedures (including potential Native American monitors), notification procedures, key staff, and preliminary treatment measures for potential discoveries. The CRMMP shall be written to ensure compliance with appropriate state and federal laws. The training presentation and CRMMP shall be available to additional supervisory or construction personnel who may join after project construction has begun.

<u>Inadvertent Discovery of Archaeological Resources</u>

Although not expected to occur due to the low potential in the APE, in the event of an inadvertent discovery of archaeological resources during construction activities, the proposed project would be subject to California Public Resources Code (PRC) Section 21083.2(i) regarding provisions related to the accidental discovery of archaeological resources. These provisions include immediately halting construction work in the vicinity of the find (within a 50-foot buffer), and LADWP retaining a qualified archaeologist meeting Secretary of Interior standards to evaluate the significance of and determine appropriate treatment for the resource in accordance with the provisions of CEQA Guidelines Section 15064.5 and the National Historic Preservation Act. If the resource is determined to be potentially of Native American in origin, the tribal cultural resources mitigation measure, as outlined below, would be required to mitigate potential impacts to a less than significant level. If the resource is determined to be non-Native American in origin and is determined to be potentially significant, a treatment or avoidance plan shall be developed within 48-hours of the discovery. Work in the area may not resume until evaluation and treatment of the resource is completed or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while the evaluation and treatment of archaeological resources take place. For non-Native American archaeological resources, compliance with PRC Section 21083.2(i) as well as the implementation of the Cultural Resources Awareness Training BMP, as outlined above, would ensure that the impact would be less than significant.

<u>Inadvertent Discovery of Tribal Cultural Resources</u>

If an inadvertently discovered archaeological resource is determined to be potentially of Native American in origin, the following mitigation measure would be required to reduce impacts to a less than significant level. With compliance with PRC Section 21083.2(i), implementation of the mitigation measure as well as the Cultural

Resources Awareness Training BMP, as outlined above, impacts to tribal cultural resources would be less than significant.

Mitigation Measure

In the event that an archaeological resource inadvertently discovered during project construction is determined to be potentially of Native American origin based on the initial assessment of the find by a qualified archaeologist pursuant to California Public Resources Code (PRC) Section 21083.2(i), the Native American tribes that consulted on the proposed project pursuant to California Assembly Bill 52 shall be notified and be provided information about the find to allow for early input from the tribal representatives with regards to the potential significance and treatment of the resource.

If, as a result of the resource evaluation and tribal consultation process, the resource is considered to be a tribal cultural resource determined, in accordance with California PRC Section 21074, to be eligible for inclusion in the California Register of Historic Resources or a local register of historical resources or determined to be significant by LADWP (the CEQA lead agency), the qualified archaeologist shall monitor all remaining ground-disturbing activities in the area of the resource, and a tribal monitor from a consulting Native American tribe shall be invited to monitor the ground-disturbing activities. All monitoring performed shall be compensated. The tribal monitor shall be ancestrally affiliated with the project area and qualified by their tribe to monitor tribal cultural resources.

The input of all consulting tribes shall be taken into account in the preparation of any required treatment plan for the resources prepared by the qualified archaeologist. Work in the area of the discovery may not resume until evaluation and treatment of the resource is completed and/or the resource is recovered and removed from the site. Construction activities may continue on other parts of the construction site while evaluation and treatment of the resource takes place.

Although not expected to occur, in the event that human remains are discovered, the remains would be treated in accordance with all applicable regulations. In accordance with the provisions of the California Health and Safety Code Section 7050.5, in the event that human remains are discovered during project construction, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains would occur, and the Los Angeles County Coroner would be notified. The coroner would provide recommendations concerning the treatment and disposition of the human remains within two working days. If the remains and/or related resources, such as funerary objects, are determined to be of Native American origin, the coroner would contact the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code Section 5097.98, the Native American Heritage Commission would immediately notify the person it believes to be most likely descended from the deceased Native American. The most likely descendent would be given access to the site where the remains were discovered and may make recommendations for the treatment and disposition of the remains and related resources, as well as provide input regarding the potential for other remains to be present. Work at the discovery site may commence only after consultation with the most likely descendent and treatment of the remains and any associated resources have been concluded. Work may continue on other parts of the project site while consultation and treatment are conducted. Compliance with these existing regulations as well as the implementation of the Cultural Resources Awareness Training BMP would ensure that the impact to human remains, including Native American remains, would be less than significant.

Prepared by

Allison Hill

Allison Hill, M.A., RPA
Archaeologist

Attachment 1 – Project Area Maps

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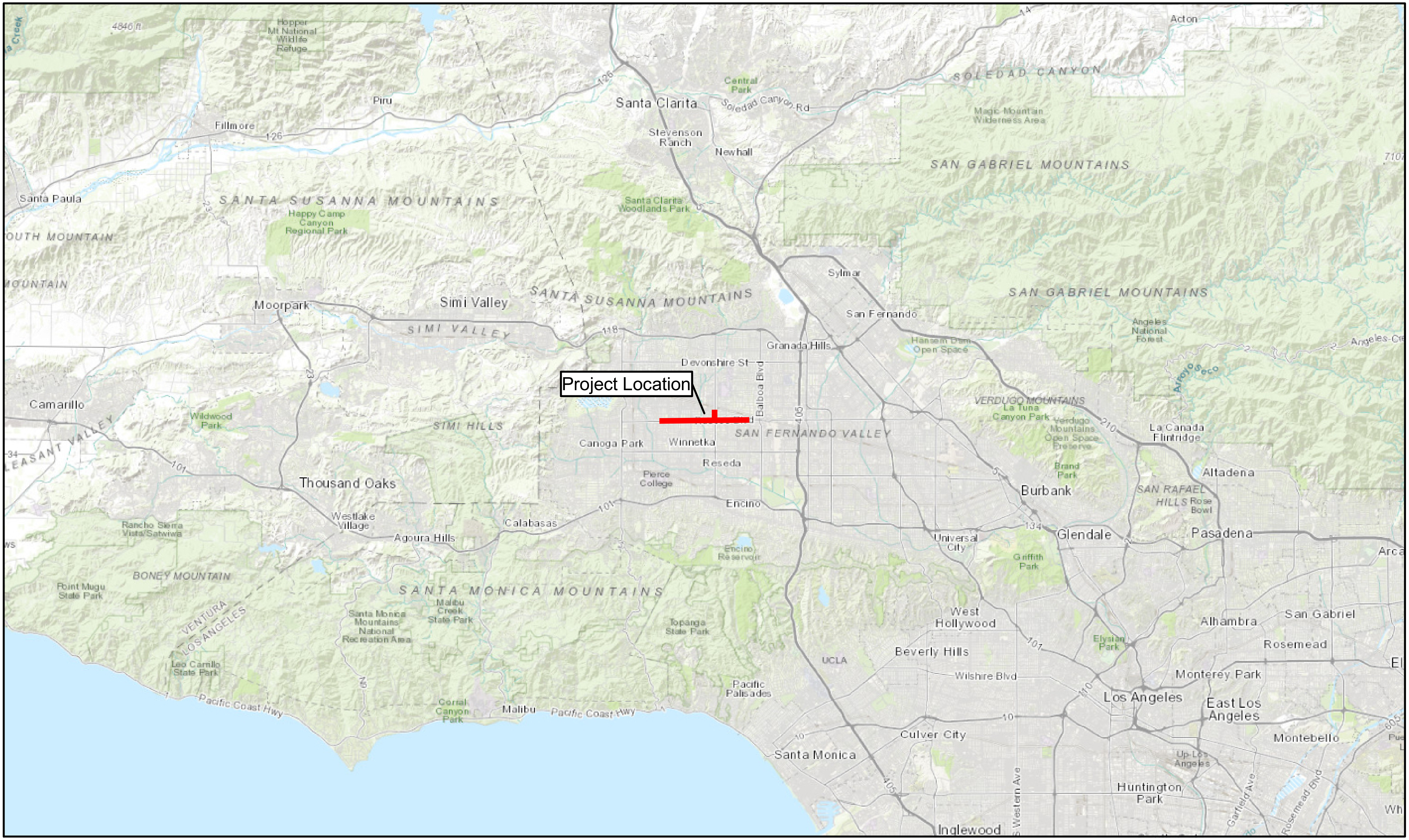
Attachment 1

Project Area Maps



Overview Map

Legend

Project Location

0	2	4	8	12 Miles

0	2	4	8	12	16 Kilometers

1 inch = 30,000 feet

1:360,000

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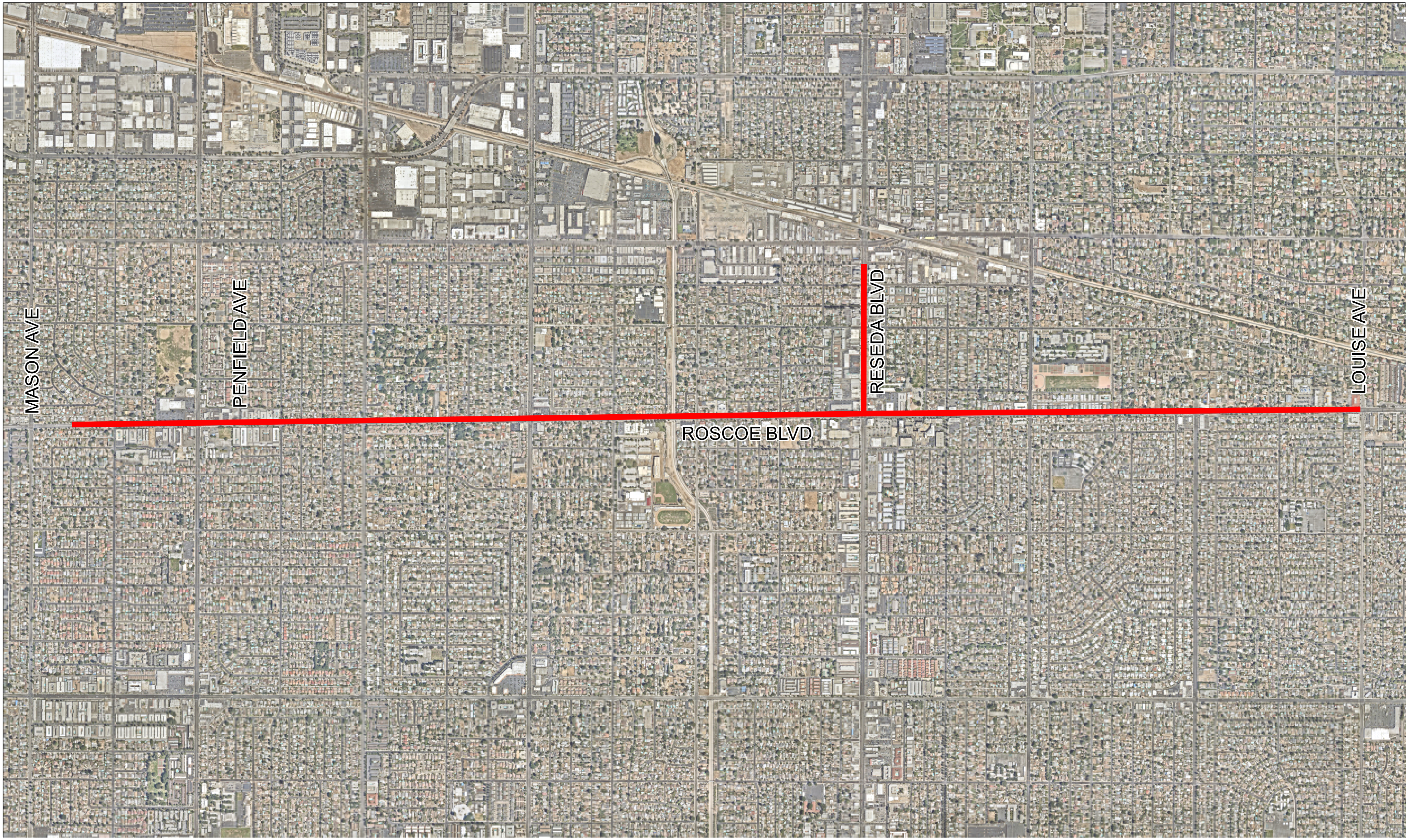
Date: 8/9/2021

Roscoe Trunk Line
Replacement Project

VICINITY MAP

AECOM

Figure 1



Overview Map

Legend

Project Location

0 700 1,400 2,800 4,200 Feet

0 150 300 600 900 1,200 Meters

1 inch = 2,100 feet

1:25,200

N

Date: 8/9/2021

Roscoe Trunk Line Replacement Project

PROJECT LOCATION

AECOM

Figure 2

APPENDIX D

Greenhouse Gas Emissions Assessment

environmental planners

Technical Memorandum

TO: Shannon Ledet
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: September 21, 2021

RE: Roscoe Trunk Line Replacement Project – Greenhouse Gas Emissions Impacts Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a GHG Emissions Assessment for the Roscoe Trunk Line Replacement Project (RTLR project or proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- GHG Topical Information
- Regulatory Framework
- Existing Setting
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to replace approximately 21,000 linear feet of the existing Roscoe Trunk Line. The Roscoe Trunk Line Replacement (RTLR) project would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from Mason Avenue on the west to Louise Avenue on the east, in the west San Fernando Valley area of Los Angeles. The RTLR would replace an existing high-density polyethylene trunk line that has experienced 15 leaks between 2004 and 2019. The condition of the existing line compromises the reliability of water supply in the area and also substantially increases long-term maintenance and repair activities. The proposed project would also include approximately 18,000 linear feet of a new 16-inch diameter distribution mainline, approximately 2,300 linear feet of a 12-inch diameter replacement distribution mainline, and two new pressure regulating stations. All these proposed facilities would be located underground within the road right-of-way.

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The RTLR project would be located in the western San Fernando Valley of the City of Los Angeles. Roscoe Boulevard, an east-west thoroughfare, forms the boundary between the communities of Northridge and Chatsworth to the north and Reseda and Winnetka to the south. Uses along Roscoe consist of a mix of single-family and multi-family residential, retail and service commercial, and institutional uses, including schools and the Northridge Hospital Medical Center. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the RTLR project area. While the majority of the RTLR project would be located within Roscoe Boulevard, one proposed underground regulation station would be located within Penfield Avenue just north of Roscoe Boulevard, and the proposed 12-inch diameter replacement distribution mainline would be installed in Reseda Boulevard between Roscoe Boulevard and Bryant Street.

Proposed RTLR Components and Location

The primary component of the proposed project is a new underground 48-inch diameter welded steel or ductile iron trunk line, which would the replace the existing high-density polyethylene Roscoe Trunk Line. As previously discussed, the replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line and the 1,134-foot service zone at Louise Avenue. On the west, the RTLR would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement and the 1,123-foot service zone near Mason Avenue.

Because the RTLR would interconnect directly to the 1,134-foot and 1,127-foot zones to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline, which would provide the direct service to the 947-foot zone currently provided by the existing Roscoe Trunk Line. The proposed 16-inch mainline would closely parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west.

To reduce the operating pressure between the higher service zones with which the RTLR would interconnect (i.e., the 1,134-foot and 1,127-foot zones) and the 947-foot zone, the proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project. As is the case with the existing Roscoe & Louise Regulating Station, the two proposed regulating stations would be located entirely underground.

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street. In addition, 250 linear feet of 60-inch diameter trunk line would be installed in Louise Avenue north of Roscoe Boulevard for connection to the future proposed Havenhurst Trunk Line replacement.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include pressure relief stations, valves, flow meters, and maintenance holes. All these facilities would be located underground within the road right-of-way.

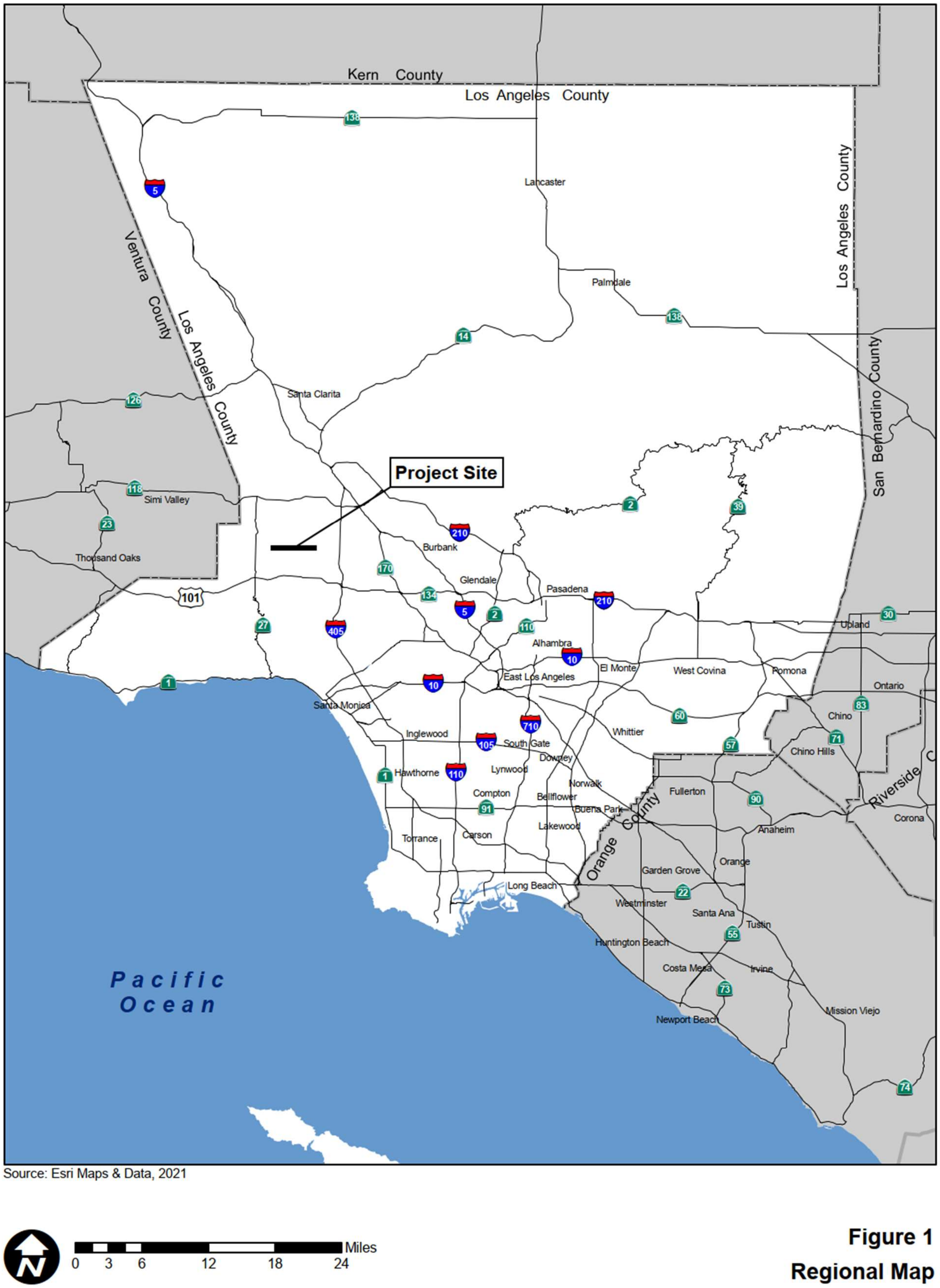

Figure 1
Regional Map

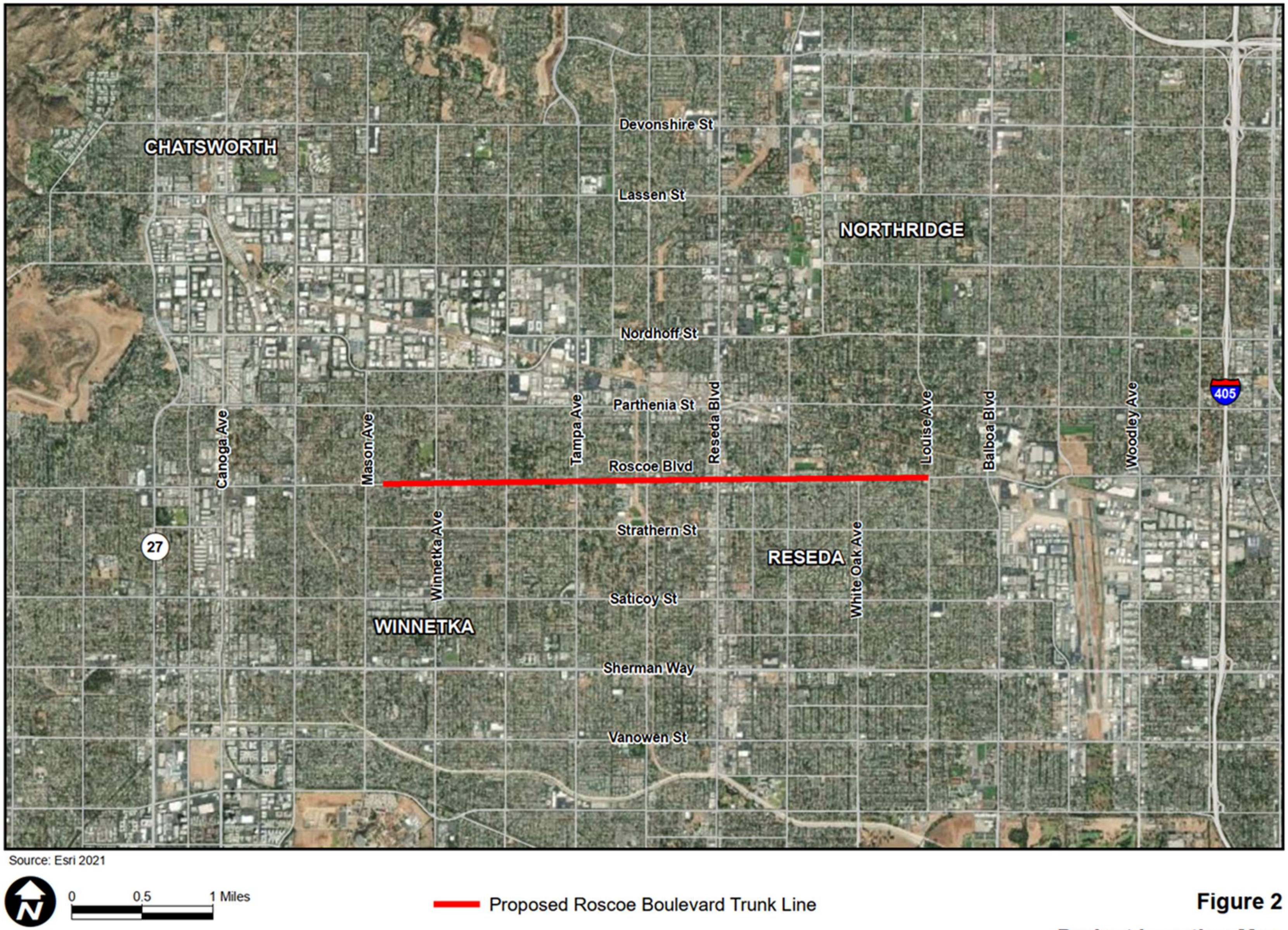

Figure 2

Project Location Map

Project Construction – Construction Schedule

Construction for the proposed project is preliminarily scheduled to begin in mid-2024 and would take approximately 7 years to complete. In order to achieve this schedule, various sections of the project would be under construction concurrently in different locations within the project limits.

Project Construction – Trunk Line Open-Trench Construction

The majority of the RTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline sections are placed in the trench, the trench is backfilled, and the road is repaved. In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, these work zones would range between approximately 800 and 1,200 feet in length.

The open-trench construction process would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench would be required to provide a stable and safe working environment. The type of shoring system used would depend on soil conditions, but for environmental analysis purposes, it is assumed that steel H-beams supporting steel plates would be utilized. Prior to any excavation of the trench, the H-beams would be set as vertical piles along both edges of a length of trench, spaced to support the steel plates. Depending on soil conditions, the H-beam piles would be installed in pre-augered holes or by using a vibratory driver, or a combination of both. No impact piling-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately 1 month.

After the shoring piles are in place, work would begin on installing individual pipe segments. A trench approximately 12 feet wide and normally 10 feet deep would be excavated. This depth of trench would accommodate the 48-inch diameter trunk line, bedding material under the trunk line, and the minimum 5 feet of cover required over the line. However, in limited areas, to avoid relocating existing substructures, such as water, storm, or sanitary sewer lines crossing the RTLR alignment, the trench may need to be up to 20 feet deep.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 40 linear feet of trench could be excavated and shored in a day. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone.

After a sufficient length of trench is excavated, a pipe segment would be placed in the trench by a crane and joined to the preceding pipe segment. Once the pipe joint is complete, cement slurry bedding material would be placed under the newly installed pipe segment to secure its position. Approximately two segments of pipe, which are nominally 20 feet in length, could be installed in a day. However, as this installation is occurring, the work on the succeeding sections of the pipeline alignment would be initiated, beginning with the excavation of the trench and placement of shoring. In this manner, the work associated with adjacent sections of the pipeline installation could overlap by a few days.

Once approximately 200 feet of pipeline have been installed, the trench would be partially backfilled with a soil-cement slurry, which would be delivered by concrete trucks. As discussed above, the trunk line would require a minimum of 5 feet of cover, which would be achieved with a trench depth of approximately 10 feet. However, because the proposed 16-inch distribution mainline would be installed in the same trench at a shallower depth, the trench would be only partially backfilled after installation of the trunk line.

The 16-inch mainline, which requires only a minimum of 3 feet of cover, would then be installed within the partially backfilled trench. It would be offset both horizontally and vertically from the trunk line to provide separation between the two pipelines to avoid potential future maintenance access conflicts. The mainline pipe segments would be installed in a similar fashion as the trunk line segments. The installation of the mainline would occur while the installation of the trunk line would be underway in forward areas of the trench.

After the mainline is installed, the trench would be backfilled to just below the top of pavement. After the trench backfilling, the H-beam piles and shoring plates would be extracted and the pile holes would be backfilled. After several hundred feet of trench have been completely backfilled, the road would be repaved to the level of the surrounding road surface.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 8 to 12 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The same basic process described above would also apply to the installation of the 60-inch line in Louise Avenue, which would extend approximately 250 feet north of Roscoe Boulevard.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the RTLR, and the 16-inch mainline within the same trench. These would include a drill rig, excavator, front loader, hydraulic cranes, forklifts, pavement saw, sweeper, utility trucks, and generators. However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 18 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity, this may require up to about 5 concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately 23 truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and mainline installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling

While the majority of the RTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling construction method would be employed to install the trunk line. This would apply to areas where large substructures that cannot be readily relocated would preclude the excavation of a trench the depth and width required for the RTLR. These structures include major sewer, storm, natural gas, or water lines or other structures, including Aliso Canyon Wash, a large concrete-lined flood control channel that crosses beneath Roscoe Boulevard. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The substructures that would conflict with the RTLR installation cross Roscoe Boulevard, usually at major intersections, and run within Roscoe Boulevard, parallel with the RTLR alignment. Preliminarily, microtunneling spans along Roscoe Boulevard identified for the project would extend beneath White Oak Avenue; from east of Lindley Avenue to west of Reseda Boulevard; from east of Wilbur Avenue to west of Vanalden Avenue; beneath Tampa Avenue; and beneath Winnetka Avenue. The total length of pipe jacking on Roscoe Boulevard is preliminarily estimated at approximately 7,600 feet of the total 21,000-foot RTLR.

While direct disturbance of most the roadway surface within a tunneling span is avoided, the microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the tunneling and jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, a minimum of one vehicle travel lane in each direction would be maintained on Roscoe Boulevard at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. The work zones surrounding each shaft would be approximately 350 feet long. They would overlap in location with the adjacent open-trench work zone, but both work zones would not be active at the same time.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 40 feet. To accommodate the tunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching shafts would be approximately 20 feet wide and 50 feet long. The receiving shafts would be approximately 20 feet wide and 30 feet long, large enough to receive the tunnel boring machine and allow it to be retrieved from the shaft.

The type of shoring system used to stabilize the shaft walls would depend on the soil and other conditions at each shaft location, but for environmental analysis purposes, it has been assumed that interlocking steel sheet piles would be used as shoring material to help control the intrusion of groundwater (which may be present at the depths of the shafts in various locations within the project limits), thereby minimizing the requirement for dewatering. After the road pavement above the shaft has been stripped, the sheet piles would be installed around the perimeter of the shaft prior to excavation. The pile installation would be achieved using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of tunneling equipment may take several weeks.

Several types of tunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits tunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 20 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded joined to the previous section to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

After the casing pipe is in place, the new trunk line pipe segments, which are also nominally 20 feet in length, would be pushed through from the launching shaft to the receiving shaft using the hydraulic jack. Radial spacers would be strapped to the segments to maintain clearance between the edges of the casing pipe. Grout would be injected to permanently fill the gap between the casing pipe and trunk line.

After the pipe is entirely installed within the tunnel, a section of pipe would be installed via an open-trench method to provide the vertical transition required to connect to the adjacent open-trench trunk line, which would have been installed at a shallower depth than the tunneled section of trunk line. The boring equipment would then be removed and transported to the succeeding tunnel span, if applicable. The shaft would be backfilled with soil-cement slurry to below top of pavement, the shoring piles would be removed, the road surface repaved and restriped, and the work zone barriers would be removed.

Because microtunneling is limited to a length of approximately 1,000 feet, in some longer spans identified for tunneling under the proposed project, it would be necessary to have intermediate shafts in addition to the shafts at the end points of the entire span.

The pipe casing would be installed in the tunnel at an average rate of about two to three segments per day, and the trunk line pipe segments would be installed at a similar rate. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 900 feet to over 3,500 feet in total length. However, the entire microtunneling operation at a given shaft location would be expected to range from approximately 8 months to 10 months. However, at intermediate shafts, where tunneling would occur sequentially in both directions, operations at a given shaft may extend to approximately 15 months.

Various pieces of construction equipment would be used to accomplish the pipe jacking installation, including an excavator, front loader, hydraulic crane, utility truck, generator, the hydraulic boring machine, tunnel ventilation systems, and the slurry separator plant. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about 22 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity.

The peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about 25 concrete trucks per day to backfill both shafts. The pipe jacking installation would require approximately 10 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Distribution Mainline Open-Trench Installation

The majority of the 16-inch distribution mainline would be installed in conjunction with the open-trench installation of the trunk line. However, where the RTLR would be installed via the microtunneling method described above, the 16-inch distribution mainline could not be accommodated in the tunnel. Furthermore, since the 16-mainline must connect to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones, it could not be installed at the depths of the RTLR microtunneling. Therefore, within the microtunneling spans, the 16-inch mainline would be installed utilizing an open-trench method similar to that described above. The only exception to this would be at the Aliso Canyon Wash crossing, where the distribution line would be installed via microtunneling under the channel.

This would require the establishment of work zones within the roadway. However, because of the relatively smaller diameter of the mainline pipe and the shallower depth requirements, the trench would be substantially smaller, at 5 feet deep and 3 to 4 feet wide, depending on whether shoring is required. The work zone may also be correspondingly narrower, and, depending on the exact alignment of the pipeline, several vehicle travel lanes may be available during construction. However, a minimum of one travel lane in each direction would be maintained at all times adjacent to the portion of the roadway under construction. An average of approximately 100 linear feet of mainline pipe would be installed each week.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the 16-inch mainline. These would include an excavator, front loader, small hydraulic crane, forklift, pavement saw, sweeper, utility trucks, and generators. However, as discussed above, these pieces of equipment would operate to perform specialized tasks, and, therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

The daily peak of haul truck trips would occur during the excavation of the trench, which may require up to 8 dump trucks trips per day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry, which would require about 5 concrete trucks per day, assuming a 10-cubic yard truck capacity. The excavation and backfilling operations may occur simultaneously in different segments of the trench, which would result in a peak of 13 truck trips per day within a given work zone. The open-trench installation would require approximately 20 daily construction personnel in a given work zone. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone would be approximately 4 months. The process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

This same process described above would apply to the 12-inch mainline in Reseda Boulevard, where no trunk line installation would occur.

Project Construction – Regulating Stations

As mentioned above, two new regulating stations would be constructed as part of the proposed project. One would be located within Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station), and the other would be located within Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station). Although the dimensions of the two regulating station vaults would vary based on exact requirements, they would nominally require a pit approximately 25 feet deep, 20 feet wide, and 23 feet long to accommodate the vault set on base material as well as the space required to connect the pipe legs from the RTLR.

It has been assumed that interlocking corrugated steel sheet piles would be used as shoring material to stabilize the pit walls to limit groundwater intrusion, thereby minimizing the requirement for dewatering. After the road pavement has been stripped, the sheet piles would be installed prior to any excavation using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the pit would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the pit and hauled from the construction work zone to a local landfill.

Once the area is excavated, base material to support the vault would be laid down, the precast concrete vault would be placed, and the pipe legs with the regulator valves would be installed within the vault envelope and extended through the vault walls to a manifold pipe, which in turn would connect to the trunk line. Support equipment, such as ladders, catwalks, and ventilation would be installed within the vault. The pit would be backfilled with soil-cement slurry to below top of pavement and the road surface repaved.

The construction of each regulating station would take approximately 4 to 6 months to complete. Installation of the stations would not occur after the installation of the trunk line, and a separate construction zone within the road right-of-way would be established for this work. Various pieces of construction equipment would be used to construct the stations. These would include an excavator, front loader, hydraulic crane, sweeper, utility trucks, and generators. These pieces of equipment would be used only for certain tasks (i.e., to excavate the vault pit or set the vault in the pit), and they would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 20 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The daily peak of delivery trucks would occur during the backfilling of the pit with the soil-cement slurry, which would require about 20 concrete trucks per day, assuming a 10-cubic yard truck capacity.

The regulating station construction would require approximately 20 daily construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Operations

The RTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. In addition, trunk line repair and maintenance activities would be substantially reduced after project implementation when compared to current requirements because of the poor condition of the existing Roscoe Trunk Line. No additional permanent LADWP workforce would be required to operate the RTLR.

GHG Topical Information

GHG emissions refer to a group of emissions that are generally believed to affect global climate conditions. The greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. GHGs, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), keep the average surface temperature of the Earth close to 60-degree Fahrenheit (°F). Without the natural greenhouse effect, the Earth's surface would be about 61°F cooler.[1] In addition to CO_2, CH_4, and N_2O, GHGs include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), black carbon (black carbon is the most strongly light-absorbing component of particulate matter emitted from burning fuels such as coal, diesel, and biomass), and water vapor.

CO_2 is the most abundant pollutant that contributes to climate change through fossil fuel combustion. The other GHGs are less abundant but have higher global warming potential than CO_2. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent of CO_2, denoted as CO_2e. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. **Table 1** shows various GWP.

TABLE 1: GLOBAL WARMING POTENTIAL FOR VARIOUS GREENHOUSE GASES

Pollutant	Lifetime (Years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon Dioxide (CO_2)	--	1	1
Methane (CH_4)	12	21	25
Nitrous Oxide (N_2O)	114	310	298
Nitrogen Trifluoride	740	Unknown	17,200
Sulfur Hexafluoride (SF_6)	3,200	23,900	22,800
Perfluorocarbons (PFCs)	2,600-50,000	6,500-9,200	7,390-12,200
Hydrofluorocarbons (HFCs)	1-270	140-11,700	124-14,800

SOURCE: CARB, *First Update to the Climate Change Scoping Plan*, 2014.

[1] California Environmental Protection Agency Climate Action Team, *Climate Action Report to Governor Schwarzenegger and the California Legislator*, March 2006.

Regulatory Framework

In response to growing scientific and political concern with global climate change, a series of federal and state laws have been adopted to reduce GHG emissions. The following provides a brief summary of GHG regulations and policies. This is a not an exhaustive list of all regulations and policies.

Federal

***Massachusetts vs. Environmental Protection Agency*, 127 S. Ct. 1438 (2007)**. A Supreme Court ruling that CO_2 and other GHGs are pollutants under the Clean Air Act.

Energy Independence and Security Act. This act set a Renewable Fuel Standard of 36 billion gallons of biofuel usage by 2022, increases Corporate Average Fuel Economy Standards of setting 35 miles per gallon of cars and light trucks by 2020 and sets new standards for lighting and residential and commercial appliance equipment.

National Fuel Efficiency Policy and Fuel Economy Standards. This 2009 policy was designed to increase fuel economy by more than five percent by 2016 starting with model year 2012 cars and trucks.

Heavy-Duty Vehicle Program. This 2011 program established the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with model year 2014.

State

Energy Efficiency Standards for Residential and Non-residential Buildings (Title 24 of the California Code of Regulations). Title 24 standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings.

California Green Building Code. Also referred to as CalGreen, lays out minimum requirements for newly constructed buildings in California, which will reduce GHG emissions through improved efficiency and process improvements.

Senate Bill 1078 (SB 1078), Senate Bill 107 (SB 107), and Executive Order (E.O.) S-14-08 (Renewables Portfolio Standard). Signed on September 12, 2002, SB 1078 required California to generate 20 percent of its electricity from renewable energy by 2017. SB 107, signed on September 26, 2006 changed the due date for this goal from 2017 to 2010, which was achieved by the state. On November 17, 2008, Executive Order (E.O.) S-14-08 established a Renewables Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

Executive Order (E.O.) S-3-05. E.O. S-3-05 set the following GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32. The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32, focuses on reducing GHG emissions in California and requires the California Air Resources Board (CARB) to adopt rules and regulations that would achieve GHG emissions equivalent to Statewide levels in 1990 by 2020. The 2020 target reductions were estimated to be 174 million metric tons of CO_2e. In November 2017, CARB adopted the final 2017 Scoping Plan: The Strategy for Achieving California's 2030 GHG target (2017 Scoping Plan). The 2017 Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts and identifies new policies and actions to accomplish the State's climate goals.

Senate Bill 375 (SB 375). Provides a means for achieving Assembly Bill 32 goals through the reduction in emissions by cars and light trucks. SB 375 requires Regional Transportation Plans (RTPs) prepared by Metropolitan Planning Organizations (MPOs) to include Sustainable Communities Strategies (SCSs).

Senate Bill 743 (SB 743). Encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled (VMT), which contribute to GHG emissions, as required by Assembly Bill 32.

Executive Order (E.O.) B-30-15. This policy set a goal to reduce GHG emissions 40 percent below their 1990 levels by 2030. The E.O. establishes GHG emissions reduction targets to reduce emissions to 80 percent below 1990 levels by 2050 and sets an interim target of emissions reductions for 2030 as being necessary to guide regulatory policy and investments in California and put California on the most cost-effective path for long-term emissions reductions.

Senate Bill 32 (SB 32). This bill required a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels.

Regional

Southern California Association of Governments (SCAG) Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS). SCAG is the MPO for the six-county region that includes Los Angeles, Orange, Riverside, Ventura, San Bernardino and Imperial counties. The RTP/SCS includes commitments to reduce emissions from transportation sources to comply with SB 375. Goals and policies included in the RTP/SCS to reduce air pollution consist of adding density in proximity to transit stations, mixed-use development and encouraging active transportation (i.e., non-motorized transportation such as bicycling).

Local

L.A.'s Green New Deal (Sustainable City pLAn 2019). In April 2019, Mayor Eric Garcetti released L.A.'s Green New Deal (Sustainable City pLAn 2019). Rather than an adopted plan, the Green New Deal is a mayoral initiative that consists of a program of actions designed to create sustainability-based performance targets through 2050 that advance economic, environmental, and equity objectives. L.A.'s Green New Deal (Sustainable City pLAn 2019) is the first four-year update to the City's first Sustainable City pLAn that was released in 2015. It augments, expands, and elaborates in even more detail L.A.'s vision for a sustainable future and it addresses climate change with accelerated targets and new aggressive goals. While not a plan adopted solely to reduce GHG emissions, climate mitigation is one of eight explicit benefits within L.A.'s Green New Deal that help define its strategies and goals.

GreenLA Climate Action Plan. The City of Los Angeles has issued guidance promoting sustainable development to reduce GHG emissions citywide in the form of a Climate Action Plan. The objective of GreenLA is to reduce GHG emissions 35 percent below 1990 levels by 2030.

ClimateLA. In order to provide detailed information on action items discussed in GreenLA, the City published an implementation document titled ClimateLA. ClimateLA presents the existing GHG inventory for the City, describes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels which were estimated to be approximately 54.1 million metric tons.

Existing Buildings Energy and Water Efficiency Ordinance. This ordinance is designed to facilitate the comparison of buildings' energy and water consumption, and reduce building operating costs, leading to reduced GHG emissions.

2017 LADWP Power Strategic Long-Term Resource Plan (SLTRP). The SLTRP is a 20-year roadmap that guides the LADWP power system in its efforts to supply reliable electricity in an environmentally responsible and cost-effective manner. One of the main focuses of the SLTRP is to reduce GHG emissions, while maintaining cost competitive rates and reliable electric service. The SLTRP examines multiple strategies to reduce GHG emissions, including early coal replacement, accelerated RPS, energy efficiency, local solar, energy storage, and transportation electrification. The 2017 SLTRP provides a path towards this goal with a combination of GHG reduction strategies, including early coal replacement two years ahead of schedule by 2025, accelerating RPS to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036, doubling of energy efficiency from 2017 through 2027, repowering coastal in-basin generating units with new, highly efficient potential clean energy projects by 2029 to provide grid reliability and critical ramping capability, accelerating electric transportation to absorb GHG emissions from the transportation sector, and investing in the Power System Reliability Program to maintain a robust and reliable Power System.

Existing Setting

Emissions of GHGs to the atmosphere are the result of both natural and human-influenced activities. Volcanic activity, forest fires, decomposition, industrial processes, landfills, consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human activity, the Earth would maintain an approximate, but varied, balance between the emission of GHGs into the atmosphere and the storage of GHG in oceans and terrestrial ecosystems. Increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) has contributed to a rapid increase in atmospheric levels of GHGs over the last 150 years.

Statewide GHG Emissions Inventory

Table 2 shows statewide GHG emissions from 2008–2018 that are tracked by the CARB. The transportation sector represents California's largest source of GHG emissions and contributed 39 percent of total annual emissions. Since 2013, emissions from the transportation sector have increased; however, the long-term direction of transportation related GHG emissions is declining, with a 11 percent drop over the past decade.

TABLE 2: CALIFORNIA GREENHOUSE GAS EMISSIONS INVENTORY

Sector	Annual CO_2e Emissions (Million Metric Tons)										
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Transportation	174.8	168.0	165.1	161.8	161.4	161.2	162.6	166.2	169.8	171.0	169.5
Industrial	89.9	87.2	91.0	89.3	88.9	91.6	92.4	90.1	88.9	88.7	89.2
Electric Power	120.1	101.3	90.3	89.2	98.2	91.4	88.9	84.8	68.6	62.1	63.1
Commercial and Residential	44.4	44.5	45.9	46.0	43.5	44.2	38.2	38.8	40.6	41.3	41.4
Agriculture	35.1	32.9	33.7	34.4	35.5	33.8	34.8	33.4	33.2	32.3	32.6
High GWP Emissions	11.7	12.3	13.5	14.5	15.5	16.8	17.7	18.6	19.3	20.0	20.5
Recycling and Waste	8.4	8.5	8.7	8.7	8.7	8.7	8.8	8.8	8.9	9.0	9.1
Total	**484.4**	**454.7**	**448.2**	**443.9**	**451.7**	**447.7**	**443.4**	**440.7**	**429.3**	**424.4**	**425.4**

SOURCE: CARB, *California Greenhouse Gas Emission Inventory – 2020 Edition.* Data available at: https://ww3.arb.ca.gov/cc/inventory/data/data.htm.

Of note, between October 23, 2015, and February 18, 2016, an exceptional natural gas leak event occurred at the Aliso Canyon natural gas storage facility that resulted in unexpected GHG emissions of considerable magnitude. The exceptional incident released approximately 109,000 metric tons of CH_4, which equated to approximately 1.96 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) of unanticipated emissions in 2015 and an additional 0.52 $MMTCO_2e$ in 2016. According to CARB, these emissions will be mitigated in the future through projects funded by the Southern California Gas Company based on legal settlement and are presented alongside but tracked separately from routine inventory emissions.[2,3]

LADWP Power Resource Mix

In 2016, LADWP achieved California's SB 32 target to reduce GHG emissions to 40 percent below 1990 levels by 2030, which was 14 years ahead of the deadline.[4] By the end of 2018, LADWP systemwide emissions were reduced to 49 percent below 1990 levels, and the 2017 SLTRP forecasts that LADWP GHG emissions will be reduced to 79 percent below 1990 levels by 2037, nearly achieving the 2050 E.O. B-30-15 target.

[2]CARB, California Greenhouse Gas Inventory for 2000-2015 – Trends of Emissions and Other Indicators, June 2017.
[3]CARB, Determination of Total Methane Emissions from the Aliso Canyon Natural Gas Leak Incident, October 2016.
[4]LADWP, *Briefing Book 2019-20*, March 2020. Available at https://www.ladwpnews.com/2019-20-briefing-book/.

Significance Thresholds

This Assessment was undertaken to determine whether construction or operation of the proposed project would have the potential to result in significant environmental impacts related to GHG emissions in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed project may result in a significant environmental impact related to GHG emissions if the proposed project would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

Section 15064.4 of the CEQA Guidelines states that a lead agency should make a good-faith effort to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The lead agency has the discretion to elect whether to quantify GHG emissions resulting from a project or rely on a qualitative analysis or performance based standards. If a quantitative approach is chosen, the CEQA Guidelines promulgate that the lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and,
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The CEQA Guidelines encourage lead agencies to develop and publish thresholds of significance that the agency uses to standardize the determination of the significance of potential environmental effects of proposed projects. When adopting or using particular thresholds, the amended Guidelines allows lead agencies to consider thresholds of significance adopted or recommended by other public agencies, or recommended by experts, provided that use of the thresholds are supported by substantial evidence, and/or to develop their own significance threshold.

Neither the City nor the South Coast Air Quality Management District (SCAQMD) has officially adopted a quantitative threshold screening value for determining the significance of GHG emissions that will be generated by projects under CEQA. However, the SCAQMD published a *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* in October 2008, which contained several recommendations developed by SCAQMD staff for quantitatively assessing GHG emissions subject to CEQA.[5] Over the course of two and a half years between 2008 and 2010, the SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working Group that met 15 times beginning in April of 2008 to examine alternatives for establishing

[5]SCAQMD, *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October 2008.

quantitative GHG thresholds. Ultimately, the SCAQMD staff proposed a tiered approach to analyzing the potential significance of GHG emissions from CEQA projects that was developed through collaboration with the Stakeholder Working Group:

- **Tier 1** – Evaluate whether or not the project qualifies for any applicable exemption under CEQA.
- **Tier 2** – Determine whether the project is consistent with a GHG reduction plan (that may be part of a local general plan, for example). The concept embodied in this tier is equivalent to the existing concept of consistency in CEQA Guidelines §§15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include emissions estimates agreed upon by either CARB or the SCAQMD, have been analyzed under CEQA, and have a certified Final CEQA document.
- **Tier 3** – Numerical Attempt to identify small projects that would not likely contribute to significant cumulative GHG impacts. SCAQMD recommended a bifurcated screening level approach to address industrial projects and residential/commercial projects (which are largely indirect sources). SCAQMD staff officially adopted a 10,000 $MTCO_2e$/year threshold for industrial projects for which the district is the lead agency in December 2008.[6] For non-industrial projects, the SCAQMD staff recommended either a singular bright line threshold of 3,000 $MTCO_2e$, or separate thresholds for residential projects (3,500 $MTCO_2e$), commercial projects (1,400 $MTCO_2e$), and mixed use projects (3,000 $MTCO_2e$). These values were derived based on capturing approximately 90 percent of GHG emissions within the SCAQMD jurisdiction above the threshold so that mitigation measures to reduce emissions could be identified and enforced.
- **Tier 4** – Performance Standards such as percent emission reduction targets or sector-based standards.
- **Tier 5** – Pursue mitigation through CEQA Offsets (i.e., off-site GHG reduction credits).

The mitigation measures evaluated by SCAQMD staff were applicable to long-term, operational emissions. As the proposed project would generate GHG emissions predominantly during temporary construction activities and changes to long-term regional GHG emissions would be negligible, the GHG emissions analysis was prepared to address the most conservative staff-recommended threshold of 1,400 $MTCO_2e$ per year. Although this threshold was never officially adopted, it was the preferred screening approach recommended by scientific experts and was developed consistently with the California Air Pollution Control Officers' Association (CAPCOA) promulgated approach in their White Paper on *CEQA & Climate Change*.[7] Therefore, the use of this expert-recommended screening threshold is backed by substantial evidence.

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[6] SCAQMD, *Minutes for the GHG CEQA Significance Working Group Meeting #15,* September 2010.

[7] CAPCOA, *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, January 2008.

Methodology

To satisfy the requirements of the CEQA Statutes and Guidelines, GHG emissions that would be generated during construction of the RTLR project were quantified using the best available modeling tools that represent the industry standard. The SCAQMD recommends the use of the California Emissions Estimator Model (CalEEMod, Version 2020.4.0) as a tool for quantifying GHG emissions that will be generated by constructing and operating development projects under CEQA. CalEEMod contains an interface for entering project information related to land use type, construction schedule, construction equipment and personnel inventories, operational elements, and mitigation measures. Sources of GHG emissions involved in implementation of the proposed project would predominantly occur during construction activities, as no new permanent sources of emissions would be introduced to the project area and maintenance of the trunk line facilities may practicably be reduced with the installation of new components. Therefore, the quantitative GHG emissions analysis focused only on sources that would be involved in construction of the RTLR project.

Construction of the proposed project is anticipated to begin sometime in mid-2024 and last for approximately seven years. Throughout the construction period, the daily activities would fluctuate, and installation of the major RTLR components would occur at varying rates. The GHG emissions assessment was framed in a programmatic manner, such that daily personnel, on-road vehicle, and off-road equipment activity inventories were compiled for a single day of each phase of construction, and then those emissions were multiplied by the total estimated number of days that each component would take to complete. As detailed in the Project Description, the four main components of the RTLR project are:

- Trunk Line Open-Trench Construction along Roscoe Boulevard (approximately 13,500 linear feet)
- Trunk Line Microtunneling along Roscoe Boulevard (approximately 7,600 linear feet)
- Distribution Mainline Open-Trench Installation along Roscoe Boulevard (parallel to microtunnel along Roscoe Boulevard and for approximately 2,300 linear feet along Reseda Boulevard)
- Construction of Two Subterranean Regulating Stations

Generally, construction of each RTLR component would involve subsurface exploration to determine existing utility locations, stripping of roadway pavement, excavation of the open trench or microtunnel shafts or regulating station vault pits, installation of the pipelines and regulating stations, backfilling of the excavated areas, and repaving of the roadway segments. Sources of GHG emissions involved in construction of the proposed project would include exhaust from on-road vehicle operation and off-road equipment use. Through collaboration with the project team, inventories of personnel, vehicles, and off-road equipment needed to complete each phase of construction for each RTLR component were compiled and input to CalEEMod to characterize daily GHG emissions that would occur during each activity. Detailed input data for the daily activity inventories can be found in the CalEEMod output files in the **Appendix**.

Estimated durations for RTLR component construction were developed based on the overall preliminary implementation schedule and the segment lengths for each type of component. The proposed project would install approximately 13,500 linear feet of trunk line via the open-trench method, approximately 7,600 linear feet of trunk line using the microtunnel technique with a tunnel boring machine, and approximately 9,900 linear feet of shallow open trench method for the distribution mainline accounting for segments along Roscoe Boulevard and Reseda Boulevard. It was assumed that construction of the trunk line and distribution mainline would be completed within the first six years of construction, and that the final year would comprise installation of the regulating stations. Detailed vehicle and equipment lists for each type of construction activity, as well as assumptions related to the activity durations, can be found in the **Appendix**.

Impact Assessment

a) Would the proposed project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-than-Significant Impact)

In accordance with the CEQA Guidelines and Statutes, GHG emissions that would be generated by implementation of the proposed project were quantified as part of the impacts assessment. The RTLR project would generate GHG emissions exclusively from construction activities, because, in relation to existing operations, operation of the proposed project following the completion of construction would not introduce any new permanent sources of GHG emissions to the project area. The installation of new infrastructure components could ultimately reduce the necessary frequency of maintenance and service visits to proposed project components in the long run. **Table 3** presents an overview of the forecasted programmatic implementation schedule by major RTLR project component and indicates during which years construction of each segment or facility would occur, as well as average annual activities. The regulating stations column includes activities for construction of both stations. Refer to the **Appendix** for the daily personnel, on-road vehicle, and equipment inventories for each activity listed below.

TABLE 3: PROPOSED PROJECT COMPONENT CONSTRUCTION SCHEDULE

Schedule Parameter	RTLR Open-Trench	RTLR Microtunnel	Dist. Mainline Open-Trench	Regulating Stations
Program Years Active	1–6	1–6	1–6	7
Total Road Stripping Days	300	150	120	10
Average Road Stripping Days/Year	*50*	*25*	*20*	*10*
Total Trench/Shaft Shoring Days	600	300	180	20
Average Trench/Shaft Shoring Days/Year	*100*	*50*	*30*	*20*
Total Trench/Shaft Excavation Days	900	450	300	90
Average Excavation Days/Year	*150*	*75*	*50*	*90*
Total Pipeline Installation Days	900	450	300	90
Average Pipeline Installation Days/Year	*150*	*75*	*50*	*90*
Total Backfilling Days	450	300	150	30
Average Backfilling Days/Year	*75*	*50*	*25*	*30*
Total Roadway Repaving Days	300	150	120	20
Average Roadway Repaving Days/Year	*50*	*25*	*20*	*20*
SOURCE: TAHA, 2021.				

The construction schedule in **Table 3** was used to develop a programmatic inventory of proposed project GHG emissions. **Table 4** presents the estimated GHG emissions that would be generated by construction of the proposed project over the seven-year schedule and displays average annual emissions. Emissions modeling estimated that construction of the proposed project would produce approximately 7,400.3 $MTCO_2e$ in total over the seven-year implementation timeline, which equates to approximately 1,057.2 $MTCO_2e$ annually on average. The annual average GHG emissions would be substantially below the lowest SCAQMD recommended screening threshold, and emissions would not persist beyond the completion of construction activities. Therefore, implementation of the proposed project will result in a less-than-significant impact related to the magnitude of GHG emissions produced.

TABLE 4: PROPOSED PROJECT CONSTRUCTION ACTIVITIES GREENHOUSE GAS EMISSIONS

Component/Source	Greenhouse Gas Emissions ($MTCO_2e$)
RTLR OPEN-TRENCH CONSTRUCTION	
Off-Road Equipment	1,557.4
Disposal Hauling Trucks	1,322.0
Material Delivery Trucks	179.5
Construction Crew Vehicles	605.4
Subtotal	***3,664.4***
RTLR MICROTUNNEL CONSTRUCTION	
Off-Road Equipment	1,068.2
Disposal Hauling Trucks	826.3
Material Delivery Trucks	626.9
Construction Crew Vehicles	157.9
Subtotal	***2,679.3***
DISTRIBUTION MAINLINE OPEN TRENCH	
Off-Road Equipment	401.9
Disposal Hauling Trucks	191.0
Material Delivery Trucks	62.1
Construction Crew Vehicles	102.7
Subtotal	***757.6***
REGULATING STATIONS	
Off-Road Equipment	110.1
Disposal Hauling Trucks	116.3
Material Delivery Trucks	30.2
Construction Crew Vehicles	42.5
Subtotal	***299.1***
Total	**7,400.3**
Annual Average Rate	***1,057.2***
Lowest Recommended SCAQMD Threshold	1,400

SOURCE: TAHA, 2021.

Mitigation Measures

No mitigation measures are required.

b) Would the proposed project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (Less-than-Significant Impact)

There is no potential for the RTLR project to conflict with GHG reduction plans. Implementation of the proposed project would not introduce any permanent, long-term sources of GHG emissions to the City of Los Angeles and would not interfere with the GHG emissions reduction plans such as *California's 2017 Climate Change Scoping Plan* and the SCAG *Connect SoCal 2020–2045 RTP/SCS*. Furthermore, by replacing the existing trunk line the RTLR project would potentially reduce the necessary frequency of maintenance and servicing trips to the trunk line. Providing a reliable and efficient water distribution system is crucial to achieving the goals of *L.A.'s Green New Deal*, and the proposed project would contribute to those efforts.

As previously discussed, proposed project GHG emissions would be well below the SCAQMD recommended screening threshold for small CEQA projects. GHG emissions are regionally cumulative in nature, and it is highly unlikely construction of any individual project would generate GHG emissions of sufficient quantity to conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Standard construction procedures would be undertaken in accordance with SCAQMD and CARB regulations applicable to heavy duty construction equipment and diesel haul trucks. Adhering to requirements pertinent to construction equipment maintenance and inspections and emissions standards, as well as diesel fleet requirements, including idling time restrictions and maintenance, would ensure that construction of the proposed project would not conflict with GHG emissions reductions efforts.

Mitigation Measures

No mitigation measures are required.

References

California Air Pollution Control Officers Association, *California Emissions Estimator Model (CalEEMod Version 2020.4.0) User's Guide*, May 2021.

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South Coast Air Quality Management District, *SCAQMD Air Quality Significance Thresholds*, April 2019.

Southern California Association of Governments, *Connect SoCal 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy*, September 2020.

<u>Appendix</u>

- CalEEMod Daily Output Files:
    - Roscoe Trunk Line Open-Trench Construction
    - Roscoe Trunk Line Microtunnel Construction
    - Distribution Mainline Shallow Open Trench Construction
    - Regulating Stations Construction
- Calculation Worksheets:
    - Roscoe Trunk Line Open-Trench Construction
    - Roscoe Trunk Line Microtunnel Construction
    - Distribution Mainline Shallow Open Trench Construction
    - Regulating Stations Construction

Roscoe Trunk Line Replacement Project - Open Trench

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	3.83	Acre	3.83	166,834.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume approximately 12.5 foot disturbance width for 13,340 LF along Roscoe Blvd

Construction Phase - Demo = subsurface exploration & pavement removal
Site Prep = shoring piles
Grading = trench excavation
BC = pipeline install
trenching = backfill trench
paving = repave roadway

Off-road Equipment - Project Inventory
Other Material Handling Equipment = cement slurry pourer

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Trip Inventory

Demolition - Approx. 20 CY max per day (12.5 ft x 40 ft x 1 ft / 27) * 1.2 = 25 tons

Grading - Approx Volumes:

Max export during excavation = approx. 18 trucks x 14 CY/truck ~ 250 CY/day
Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDays	8.00	1.00
tblConstructionPhase	NumDays	230.00	1.00
tblConstructionPhase	NumDays	18.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	50.00
tblGrading	MaterialExported	0.00	250.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Shoring
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	2.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	27.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	70.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	40.00

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					
2023	2.3353	9.0554	8.7471	0.0352	1.6571	0.3222	1.8044	0.3190	0.3055	0.5038	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**2.3353**	**9.0554**	**8.7471**	**0.0352**	**1.6571**	**0.3222**	**1.8044**	**0.3190**	**0.3055**	**0.5038**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

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					
2023	2.3353	9.0554	8.7471	0.0352	1.1583	0.3222	1.3624	0.3122	0.3055	0.5012	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**2.3353**	**9.0554**	**8.7471**	**0.0352**	**1.1583**	**0.3222**	**1.3624**	**0.3122**	**0.3055**	**0.5012**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

	ROG	**NOx**	**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**	**30.10**	**0.00**	**24.50**	**2.12**	**0.00**	**0.52**	**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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**8.9000e-004**

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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**0.0000**	**8.9000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Grading	Grading	10/11/2023	10/11/2023	5	1	
4	Install Pipeline	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Trench	Trenching	10/13/2023	10/13/2023	5	1	
6	Paving	Paving	10/14/2023	10/20/2023	6	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3.83

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	1.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Shoring	Cranes	1	4.00	231	0.29
Shoring	Excavators	1	4.00	158	0.38
Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Grading	Cranes	1	2.00	231	0.29
Grading	Excavators	1	6.00	158	0.38
Grading	Forklifts	1	2.00	89	0.20
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Pipeline	Cranes	1	7.00	231	0.29
Install Pipeline	Generator Sets	1	7.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	40.00	0.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	40.00	8.00	8.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	40.00	0.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	40.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Paving		3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282		777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**1.0700**	**0.1380**	**1.2080**	**0.1620**	**0.1282**	**0.2902**		**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1539**	**1.1886**	**1.6148**	**8.4300e-003**	**0.5871**	**9.3000e-003**	**0.5964**	**0.1570**	**8.8000e-003**	**0.1658**		**898.3607**	**898.3607**	**0.0385**	**0.0916**	**926.6176**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.3168	2.8549	4.2823	8.0500e-003		0.1380	0.1380		0.1282	0.1282	0.0000	777.7905	777.7905	0.2312		783.5716
Total	**0.3168**	**2.8549**	**4.2823**	**8.0500e-003**	**0.4173**	**0.1380**	**0.5553**	**0.0632**	**0.1282**	**0.1914**	**0.0000**	**777.7905**	**777.7905**	**0.2312**		**783.5716**

3.2 Subsurface Exploration & Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1539**	**1.1886**	**1.6148**	**8.4300e-003**	**0.5871**	**9.3000e-003**	**0.5964**	**0.1570**	**8.8000e-003**	**0.1658**		**898.3607**	**898.3607**	**0.0385**	**0.0916**	**926.6176**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.6500e-003	0.0000	5.6500e-003	8.6000e-004	0.0000	8.6000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.6500e-003**	**0.1530**	**0.1587**	**8.6000e-004**	**0.1408**	**0.1417**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1627**	**1.5101**	**1.7375**	**9.9200e-003**	**0.6384**	**0.0109**	**0.6492**	**0.1717**	**0.0103**	**0.1820**		**1,058.8569**	**1,058.8569**	**0.0439**	**0.1147**	**1,094.1304**

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					2.2100e-003	0.0000	2.2100e-003	3.3000e-004	0.0000	3.3000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**2.2100e-003**	**0.1530**	**0.1552**	**3.3000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0162	1.0899	0.2825	4.6800e-003	0.1400	6.6000e-003	0.1466	0.0384	6.3200e-003	0.0447		514.6700	514.6700	0.0283	0.0817	539.7327
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1627**	**1.5101**	**1.7375**	**9.9200e-003**	**0.6384**	**0.0109**	**0.6492**	**0.1717**	**0.0103**	**0.1820**		**1,058.8569**	**1,058.8569**	**0.0439**	**0.1147**	**1,094.1304**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0283	0.0000	0.0283	4.2800e-003	0.0000	4.2800e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549		777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0283**	**0.1684**	**0.1966**	**4.2800e-003**	**0.1549**	**0.1592**		**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.350 0	2,573.350 0	0.1414	0.4087	2,698.663 5
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.040 7**	**2,957.040 7**	**0.1516**	**0.4185**	**3,085.548 4**

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					0.0110	0.0000	0.0110	1.6700e-003	0.0000	1.6700e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549	0.0000	777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0110**	**0.1684**	**0.1794**	**1.6700e-003**	**0.1549**	**0.1566**	**0.0000**	**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.3500	2,573.3500	0.1414	0.4087	2,698.6635
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.0407**	**2,957.0407**	**0.1516**	**0.4185**	**3,085.5484**

3.5 Install Pipeline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7076	7.0584	6.7682	0.0135		0.3180	0.3180		0.3015	0.3015		1,298.0015	1,298.0015	0.2675		1,304.6882
Total	**0.7076**	**7.0584**	**6.7682**	**0.0135**		**0.3180**	**0.3180**		**0.3015**	**0.3015**		**1,298.0015**	**1,298.0015**	**0.2675**		**1,304.6882**

3.5 Install Pipeline - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.7076	7.0584	6.7682	0.0135		0.3180	0.3180		0.3015	0.3015	0.0000	1,298.0015	1,298.0015	0.2675		1,304.6882
Total	**0.7076**	**7.0584**	**6.7682**	**0.0135**		**0.3180**	**0.3180**		**0.3015**	**0.3015**	**0.0000**	**1,298.0015**	**1,298.0015**	**0.2675**		**1,304.6882**

3.5 Install Pipeline - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

3.6 Backfill Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1487**	**0.5005**	**1.4857**	**5.6100e-003**	**0.5112**	**4.6400e-003**	**0.5158**	**0.1370**	**4.3400e-003**	**0.1414**		**584.3110**	**584.3110**	**0.0169**	**0.0387**	**596.2760**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1487**	**0.5005**	**1.4857**	**5.6100e-003**	**0.5112**	**4.6400e-003**	**0.5158**	**0.1370**	**4.3400e-003**	**0.1414**		**584.3110**	**584.3110**	**0.0169**	**0.0387**	**596.2760**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5164	5.0958	7.2921	0.0114		0.2551	0.2551		0.2347	0.2347		1,103.7921	1,103.7921	0.3570		1,112.7168
Paving	1.6724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1888**	**5.0958**	**7.2921**	**0.0114**		**0.2551**	**0.2551**		**0.2347**	**0.2347**		**1,103.7921**	**1,103.7921**	**0.3570**		**1,112.7168**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.5164	5.0958	7.2921	0.0114		0.2551	0.2551		0.2347	0.2347	0.0000	1,103.7921	1,103.7921	0.3570		1,112.7168
Paving	1.6724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.1888**	**5.0958**	**7.2921**	**0.0114**		**0.2551**	**0.2551**		**0.2347**	**0.2347**	**0.0000**	**1,103.7921**	**1,103.7921**	**0.3570**		**1,112.7168**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Unmitigated	0.0718	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0591					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**		**8.9000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0591					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.0000e-005	0.0000	3.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		8.4000e-004	8.4000e-004	0.0000		8.9000e-004
Total	**0.0718**	**0.0000**	**3.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.4000e-004**	**8.4000e-004**	**0.0000**		**8.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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

Roscoe Trunk Line Replacement Project - Microtunnel

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.25	Acre	0.25	10,890.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Microtunnel Construction Only

Land Use -

Construction Phase - k

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Inventory

Demolition - Project Inventory

Grading - Project Inventory

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	60.00
tblGrading	MaterialExported	0.00	300.00
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	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	PhaseName		Install Sheet Pile Shoring
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblTripsAndVMT	HaulingTripNumber	7.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	2.00	40.00

tblTripsAndVMT	VendorTripNumber	0.00	100.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	20.00
tblTripsAndVMT	WorkerTripNumber	5.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00

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					
2023	1.1214	10.9738	11.4476	0.0415	2.0035	0.4287	2.1672	0.3503	0.4131	0.5462	0.0000	4,415.3578	4,415.3578	0.5075	0.5158	4,581.7374
Maximum	**1.1214**	**10.9738**	**11.4476**	**0.0415**	**2.0035**	**0.4287**	**2.1672**	**0.3503**	**0.4131**	**0.5462**	**0.0000**	**4,415.3578**	**4,415.3578**	**0.5075**	**0.5158**	**4,581.7374**

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					
2023	1.1214	10.9738	11.4476	0.0415	1.1120	0.4287	1.3395	0.3013	0.4131	0.5462	0.0000	4,415.3578	4,415.3578	0.5075	0.5158	4,581.7374
Maximum	**1.1214**	**10.9738**	**11.4476**	**0.0415**	**1.1120**	**0.4287**	**1.3395**	**0.3013**	**0.4131**	**0.5462**	**0.0000**	**4,415.3578**	**4,415.3578**	**0.5075**	**0.5158**	**4,581.7374**

	ROG	**NOx**	**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**	**44.50**	**0.00**	**38.19**	**14.00**	**0.00**	**0.00**	**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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**6.0000e-005**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Subsurface Exploration & Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Install Sheet Pile Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Shaft Excavation	Grading	10/11/2023	10/11/2023	5	1	
4	Install Casing & Trunk Line	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Shafts	Trenching	10/13/2023	10/13/2023	5	1	
6	Repave Roadway	Paving	10/14/2023	10/19/2023	6	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.25

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Subsurface Exploration & Pavement Removal	Bore/Drill Rigs	1	2.00	221	0.50
Subsurface Exploration & Pavement Removal	Concrete/Industrial Saws	1	2.00	81	0.73
Subsurface Exploration & Pavement Removal	Excavators	1	4.00	158	0.38
Subsurface Exploration & Pavement Removal	Forklifts	1	4.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Subsurface Exploration & Pavement Removal	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Sheet Pile Shoring	Bore/Drill Rigs	1	2.00	221	0.50
Install Sheet Pile Shoring	Cranes	1	4.00	231	0.29
Install Sheet Pile Shoring	Excavators	1	4.00	158	0.38
Install Sheet Pile Shoring	Forklifts	1	2.00	89	0.20
Install Sheet Pile Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shaft Excavation	Bore/Drill Rigs	1	2.00	221	0.50
Shaft Excavation	Cranes	1	2.00	231	0.29
Shaft Excavation	Excavators	1	6.00	158	0.38
Shaft Excavation	Forklifts	1	2.00	89	0.20
Shaft Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Casing & Trunk Line	Bore/Drill Rigs	1	7.00	221	0.50
Install Casing & Trunk Line	Cranes	1	4.00	231	0.29
Install Casing & Trunk Line	Forklifts	1	7.00	89	0.20
Install Casing & Trunk Line	Generator Sets	1	7.00	84	0.74
Install Casing & Trunk Line	Pumps	1	7.00	84	0.74
Backfill Shafts	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Shafts	Excavators	1	6.00	158	0.38
Backfill Shafts	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Shafts	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Roadway	Pavers	1	7.00	130	0.42
Repave Roadway	Paving Equipment	1	7.00	132	0.36
Repave Roadway	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Subsurface Exploration & Paveme	5	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Install Sheet Pile Shoring	5	20.00	40.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shaft Excavation	5	20.00	0.00	50.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Casing & Trunk Line	5	20.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Shafts	4	20.00	100.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Roadway	3	20.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.6049	0.0000	1.6049	0.2430	0.0000	0.2430			0.0000			0.0000
Off-Road	0.3585	3.1779	4.7395	8.8400e-003		0.1540	0.1540		0.1443	0.1443		851.8737	851.8737	0.2349		857.7461
Total	**0.3585**	**3.1779**	**4.7395**	**8.8400e-003**	**1.6049**	**0.1540**	**1.7590**	**0.2430**	**0.1443**	**0.3873**		**851.8737**	**851.8737**	**0.2349**		**857.7461**

3.2 Subsurface Exploration & Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0891**	**1.4117**	**1.0192**	**7.7200e-003**	**0.3986**	**9.6000e-003**	**0.4082**	**0.1073**	**9.1400e-003**	**0.1164**		**835.1828**	**835.1828**	**0.0405**	**0.1071**	**868.1083**

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					0.6259	0.0000	0.6259	0.0948	0.0000	0.0948			0.0000			0.0000
Off-Road	0.3585	3.1779	4.7395	8.8400e-003		0.1540	0.1540		0.1443	0.1443	0.0000	851.8737	851.8737	0.2349		857.7461
Total	**0.3585**	**3.1779**	**4.7395**	**8.8400e-003**	**0.6259**	**0.1540**	**0.7800**	**0.0948**	**0.1443**	**0.2391**	**0.0000**	**851.8737**	**851.8737**	**0.2349**		**857.7461**

3.2 Subsurface Exploration & Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0891**	**1.4117**	**1.0192**	**7.7200e-003**	**0.3986**	**9.6000e-003**	**0.4082**	**0.1073**	**9.1400e-003**	**0.1164**		**835.1828**	**835.1828**	**0.0405**	**0.1071**	**868.1083**

3.3 Install Sheet Pile Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7900e-003	0.0000	6.7900e-003	1.0300e-003	0.0000	1.0300e-003			0.0000			0.0000
Off-Road	0.3873	3.8158	3.8983	9.0000e-003		0.1679	0.1679		0.1544	0.1544		870.7151	870.7151	0.2816		877.7553
Total	**0.3873**	**3.8158**	**3.8983**	**9.0000e-003**	**6.7900e-003**	**0.1679**	**0.1747**	**1.0300e-003**	**0.1544**	**0.1555**		**870.7151**	**870.7151**	**0.2816**		**877.7553**

3.3 Install Sheet Pile Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1336**	**3.0192**	**1.6327**	**0.0152**	**0.6548**	**0.0174**	**0.6722**	**0.1811**	**0.0166**	**0.1976**		**1,637.6641**	**1,637.6641**	**0.0672**	**0.2226**	**1,705.6727**

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					2.6500e-003	0.0000	2.6500e-003	4.0000e-004	0.0000	4.0000e-004			0.0000			0.0000
Off-Road	0.3873	3.8158	3.8983	9.0000e-003		0.1679	0.1679		0.1544	0.1544	0.0000	870.7151	870.7151	0.2816		877.7553
Total	**0.3873**	**3.8158**	**3.8983**	**9.0000e-003**	**2.6500e-003**	**0.1679**	**0.1705**	**4.0000e-004**	**0.1544**	**0.1548**	**0.0000**	**870.7151**	**870.7151**	**0.2816**		**877.7553**

3.3 Install Sheet Pile Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0203	1.3624	0.3531	5.8500e-003	0.1750	8.2500e-003	0.1833	0.0480	7.9000e-003	0.0559		643.3375	643.3375	0.0353	0.1022	674.6659
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1336**	**3.0192**	**1.6327**	**0.0152**	**0.6548**	**0.0174**	**0.6722**	**0.1811**	**0.0166**	**0.1976**		**1,637.6641**	**1,637.6641**	**0.0672**	**0.2226**	**1,705.6727**

3.4 Shaft Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0339	0.0000	0.0339	5.1400e-003	0.0000	5.1400e-003			0.0000			0.0000
Off-Road	0.4223	4.0169	5.3698	0.0104		0.1849	0.1849		0.1701	0.1701		1,006.8249	1,006.8249	0.3256		1,014.9656
Total	**0.4223**	**4.0169**	**5.3698**	**0.0104**	**0.0339**	**0.1849**	**0.2188**	**5.1400e-003**	**0.1701**	**0.1752**		**1,006.8249**	**1,006.8249**	**0.3256**		**1,014.9656**

3.4 Shaft Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1015	6.8121	1.7654	0.0293	0.8752	0.0413	0.9165	0.2400	0.0395	0.2794		3,216.6875	3,216.6875	0.1767	0.5108	3,373.3294
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1703**	**6.8614**	**2.4315**	**0.0311**	**1.0988**	**0.0426**	**1.1414**	**0.2993**	**0.0407**	**0.3400**		**3,408.5329**	**3,408.5329**	**0.1818**	**0.5158**	**3,566.7718**

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					0.0132	0.0000	0.0132	2.0000e-003	0.0000	2.0000e-003			0.0000			0.0000
Off-Road	0.4223	4.0169	5.3698	0.0104		0.1849	0.1849		0.1701	0.1701	0.0000	1,006.8249	1,006.8249	0.3256		1,014.9656
Total	**0.4223**	**4.0169**	**5.3698**	**0.0104**	**0.0132**	**0.1849**	**0.1981**	**2.0000e-003**	**0.1701**	**0.1721**	**0.0000**	**1,006.8249**	**1,006.8249**	**0.3256**		**1,014.9656**

3.4 Shaft Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1015	6.8121	1.7654	0.0293	0.8752	0.0413	0.9165	0.2400	0.0395	0.2794		3,216.6875	3,216.6875	0.1767	0.5108	3,373.3294
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1703**	**6.8614**	**2.4315**	**0.0311**	**1.0988**	**0.0426**	**1.1414**	**0.2993**	**0.0407**	**0.3400**		**3,408.5329**	**3,408.5329**	**0.1818**	**0.5158**	**3,566.7718**

3.5 Install Casing & Trunk Line - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0081	9.3170	10.1680	0.0240		0.4196	0.4196		0.4044	0.4044		2,300.2249	2,300.2249	0.4402		2,311.2308
Total	**1.0081**	**9.3170**	**10.1680**	**0.0240**		**0.4196**	**0.4196**		**0.4044**	**0.4044**		**2,300.2249**	**2,300.2249**	**0.4402**		**2,311.2308**

3.5 Install Casing & Trunk Line - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Off-Road	1.0081	9.3170	10.1680	0.0240		0.4196	0.4196		0.4044	0.4044	0.0000	2,300.2249	2,300.2249	0.4402		2,311.2308
Total	**1.0081**	**9.3170**	**10.1680**	**0.0240**		**0.4196**	**0.4196**		**0.4044**	**0.4044**	**0.0000**	**2,300.2249**	**2,300.2249**	**0.4402**		**2,311.2308**

3.5 Install Casing & Trunk Line - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

3.6 Backfill Shafts - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Shafts - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.1112	4.0187	1.5337	0.0186	0.6405	0.0194	0.6600	0.1844	0.0186	0.2030		2,006.203 0	2,006.203 0	0.0668	0.2887	2,093.911 0
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1800**	**4.0680**	**2.1999**	**0.0205**	**0.8641**	**0.0208**	**0.8849**	**0.2437**	**0.0198**	**0.2635**		**2,198.048 4**	**2,198.048 4**	**0.0719**	**0.2937**	**2,287.353 5**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.906 4	1,058.906 4	0.3342		1,067.260 2
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.906 4**	**1,058.906 4**	**0.3342**		**1,067.260 2**

3.6 Backfill Shafts - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.1112	4.0187	1.5337	0.0186	0.6405	0.0194	0.6600	0.1844	0.0186	0.2030		2,006.2030	2,006.2030	0.0668	0.2887	2,093.9110
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1800**	**4.0680**	**2.1999**	**0.0205**	**0.8641**	**0.0208**	**0.8849**	**0.2437**	**0.0198**	**0.2635**		**2,198.0484**	**2,198.0484**	**0.0719**	**0.2937**	**2,287.3535**

3.7 Repave Roadway - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5828**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Roadway - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5828**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Roadway - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1133**	**1.6568**	**1.2797**	**9.3300e-003**	**0.4798**	**9.1200e-003**	**0.4889**	**0.1331**	**8.6700e-003**	**0.1417**		**994.3266**	**994.3266**	**0.0318**	**0.1204**	**1,031.0068**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Unmitigated	4.6900e-003	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**		**6.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.3000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		5.0000e-005	5.0000e-005	0.0000		6.0000e-005
Total	**4.6900e-003**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**5.0000e-005**	**5.0000e-005**	**0.0000**		**6.0000e-005**

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

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Roscoe Truck Line Replacement Project - Dist. Mainline

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.90	Acre	0.90	39,204.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assume approximately 5 foot disturbance width for 7,600LF along Roscoe Blvd

Construction Phase - Demo = subsurface exploration & pavement removal
Site Prep = shoring piles
Grading = trench excavation
BC = pipeline install
trenching = backfill trench
paving = repave roadway

Off-road Equipment - Project Inventory
Other Material Handling Equipment = cement slurry pourer

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Trip Inventory

Demolition - Approx 250 CY per day = 300 tons/day

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	60.00
tblGrading	MaterialExported	0.00	120.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	6.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	15.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	6.00	8.00

tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	16.00	20.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	8.00	20.00

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					
2023	0.9248	5.5079	7.9860	0.0189	1.5036	0.2480	1.5836	0.2789	0.2334	0.3541	0.0000	1,961.9003	1,961.9003	0.3459	0.1684	2,019.6119
Maximum	**0.9248**	**5.5079**	**7.9860**	**0.0189**	**1.5036**	**0.2480**	**1.5836**	**0.2789**	**0.2334**	**0.3541**	**0.0000**	**1,961.9003**	**1,961.9003**	**0.3459**	**0.1684**	**2,019.6119**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9248	5.5079	7.9860	0.0189	0.8509	0.2480	0.9309	0.1801	0.2334	0.3074	0.0000	1,961.9003	1,961.9003	0.3459	0.1684	2,019.6119
Maximum	**0.9248**	**5.5079**	**7.9860**	**0.0189**	**0.8509**	**0.2480**	**0.9309**	**0.1801**	**0.2334**	**0.3074**	**0.0000**	**1,961.9003**	**1,961.9003**	**0.3459**	**0.1684**	**2,019.6119**

	ROG	NOx	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**	**43.41**	**0.00**	**41.22**	**35.43**	**0.00**	**13.19**	**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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**	**0.0000**	**2.1000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pavement Removal	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Excavate Trench	Grading	10/11/2023	10/11/2023	5	1	
4	Install Pipeline	Building Construction	10/12/2023	10/12/2023	5	1	
5	Backfill Trench	Trenching	10/13/2023	10/13/2023	6	1	
6	Paving	Paving	10/14/2023	10/20/2023	6	6	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.9

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pavement Removal	Concrete/Industrial Saws	1	1.00	81	0.73
Pavement Removal	Excavators	1	2.00	158	0.38
Pavement Removal	Forklifts	1	2.00	89	0.20
Pavement Removal	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50

Shoring	Excavators	1	2.00	158	0.38
Shoring	Forklifts	1	4.00	89	0.20
Shoring	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Excavate Trench	Bore/Drill Rigs	1	2.00	221	0.50
Excavate Trench	Excavators	1	4.00	158	0.38
Excavate Trench	Forklifts	1	6.00	89	0.20
Excavate Trench	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Install Pipeline	Cranes	1	4.00	231	0.29
Install Pipeline	Forklifts	1	6.00	89	0.20
Install Pipeline	Generator Sets	1	4.00	84	0.74
Install Pipeline	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Backfill Trench	Cement and Mortar Mixers	1	6.00	9	0.56
Backfill Trench	Excavators	1	6.00	158	0.38
Backfill Trench	Other Material Handling Equipment	1	6.00	168	0.40
Backfill Trench	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Paving	Pavers	1	7.00	130	0.42
Paving	Paving Equipment	1	7.00	132	0.36
Paving	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pavement Removal	4	20.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	20.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavate Trench	4	20.00	0.00	16.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Pipeline	4	20.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill Trench	4	20.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	20.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pavement Removal - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.1524	1.3340	2.1156	3.2300e-003		0.0688	0.0688		0.0646	0.0646		311.5115	311.5115	0.0804		313.5224
Total	**0.1524**	**1.3340**	**2.1156**	**3.2300e-003**	**1.0700**	**0.0688**	**1.1387**	**0.1620**	**0.0646**	**0.2266**		**311.5115**	**311.5115**	**0.0804**		**313.5224**

3.2 Pavement Removal - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0932**	**1.6842**	**1.0899**	**8.9000e-003**	**0.4336**	**0.0113**	**0.4449**	**0.1169**	**0.0107**	**0.1276**		**963.8503**	**963.8503**	**0.0475**	**0.1275**	**1,003.0415**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.1524	1.3340	2.1156	3.2300e-003		0.0688	0.0688		0.0646	0.0646	0.0000	311.5115	311.5115	0.0804		313.5224
Total	**0.1524**	**1.3340**	**2.1156**	**3.2300e-003**	**0.4173**	**0.0688**	**0.4860**	**0.0632**	**0.0646**	**0.1277**	**0.0000**	**311.5115**	**311.5115**	**0.0804**		**313.5224**

3.2 Pavement Removal - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	1.6349	0.4237	7.0300e-003	0.2101	9.9000e-003	0.2200	0.0576	9.4700e-003	0.0671		772.0050	772.0050	0.0424	0.1226	809.5991
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0932**	**1.6842**	**1.0899**	**8.9000e-003**	**0.4336**	**0.0113**	**0.4449**	**0.1169**	**0.0107**	**0.1276**		**963.8503**	**963.8503**	**0.0475**	**0.1275**	**1,003.0415**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7900e-003	0.0000	6.7900e-003	1.0300e-003	0.0000	1.0300e-003			0.0000			0.0000
Off-Road	0.2279	2.1447	3.0107	5.9800e-003		0.1030	0.1030		0.0948	0.0948		578.6809	578.6809	0.1872		583.3598
Total	**0.2279**	**2.1447**	**3.0107**	**5.9800e-003**	**6.7900e-003**	**0.1030**	**0.1098**	**1.0300e-003**	**0.0948**	**0.0958**		**578.6809**	**578.6809**	**0.1872**		**583.3598**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

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					2.6500e-003	0.0000	2.6500e-003	4.0000e-004	0.0000	4.0000e-004			0.0000			0.0000
Off-Road	0.2279	2.1447	3.0107	5.9800e-003		0.1030	0.1030		0.0948	0.0948	0.0000	578.6809	578.6809	0.1872		583.3598
Total	**0.2279**	**2.1447**	**3.0107**	**5.9800e-003**	**2.6500e-003**	**0.1030**	**0.1057**	**4.0000e-004**	**0.0948**	**0.0952**	**0.0000**	**578.6809**	**578.6809**	**0.1872**		**583.3598**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

3.4 Excavate Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0136	0.0000	0.0136	2.0500e-003	0.0000	2.0500e-003			0.0000			0.0000
Off-Road	0.3007	2.7718	4.1114	7.6500e-003		0.1368	0.1368		0.1259	0.1259		740.7150	740.7150	0.2396		746.7041
Total	**0.3007**	**2.7718**	**4.1114**	**7.6500e-003**	**0.0136**	**0.1368**	**0.1504**	**2.0500e-003**	**0.1259**	**0.1279**		**740.7150**	**740.7150**	**0.2396**		**746.7041**

3.4 Excavate Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.1799	0.5649	9.3700e-003	0.2801	0.0132	0.2933	0.0768	0.0126	0.0894		1,029.3400	1,029.3400	0.0566	0.1635	1,079.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1013**	**2.2292**	**1.2311**	**0.0112**	**0.5036**	**0.0146**	**0.5182**	**0.1361**	**0.0139**	**0.1500**		**1,221.1853**	**1,221.1853**	**0.0617**	**0.1684**	**1,272.9078**

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					5.2900e-003	0.0000	5.2900e-003	8.0000e-004	0.0000	8.0000e-004			0.0000			0.0000
Off-Road	0.3007	2.7718	4.1114	7.6500e-003		0.1368	0.1368		0.1259	0.1259	0.0000	740.7150	740.7150	0.2396		746.7041
Total	**0.3007**	**2.7718**	**4.1114**	**7.6500e-003**	**5.2900e-003**	**0.1368**	**0.1421**	**8.0000e-004**	**0.1259**	**0.1267**	**0.0000**	**740.7150**	**740.7150**	**0.2396**		**746.7041**

3.4 Excavate Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0325	2.1799	0.5649	9.3700e-003	0.2801	0.0132	0.2933	0.0768	0.0126	0.0894		1,029.3400	1,029.3400	0.0566	0.1635	1,079.4654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1013**	**2.2292**	**1.2311**	**0.0112**	**0.5036**	**0.0146**	**0.5182**	**0.1361**	**0.0139**	**0.1500**		**1,221.1853**	**1,221.1853**	**0.0617**	**0.1684**	**1,272.9078**

3.5 Install Pipeline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5191	5.1371	5.2840	9.6600e-003		0.2451	0.2451		0.2307	0.2307		928.1324	928.1324	0.2131		933.4606
Total	**0.5191**	**5.1371**	**5.2840**	**9.6600e-003**		**0.2451**	**0.2451**		**0.2307**	**0.2307**		**928.1324**	**928.1324**	**0.2131**		**933.4606**

3.5 Install Pipeline - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

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	0.5191	5.1371	5.2840	9.6600e-003		0.2451	0.2451		0.2307	0.2307	0.0000	928.1324	928.1324	0.2131		933.4606
Total	**0.5191**	**5.1371**	**5.2840**	**9.6600e-003**		**0.2451**	**0.2451**		**0.2307**	**0.2307**	**0.0000**	**928.1324**	**928.1324**	**0.2131**		**933.4606**

3.5 Install Pipeline - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0777**	**0.3708**	**0.7889**	**3.3600e-003**	**0.2748**	**2.9000e-003**	**0.2777**	**0.0740**	**2.7300e-003**	**0.0768**		**352.3416**	**352.3416**	**0.0105**	**0.0280**	**360.9553**

3.6 Backfill Trench - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.906 4	1,058.906 4	0.3342		1,067.260 2
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.906 4**	**1,058.906 4**	**0.3342**		**1,067.260 2**

3.6 Backfill Trench - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Backfill Trench - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.3930					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8448**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.3930					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8448**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0111	0.4019	0.1534	1.8600e-003	0.0641	1.9400e-003	0.0660	0.0184	1.8600e-003	0.0203		200.6203	200.6203	6.6800e-003	0.0289	209.3911
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.0799**	**0.4512**	**0.8195**	**3.7300e-003**	**0.2876**	**3.2900e-003**	**0.2909**	**0.0777**	**3.1000e-003**	**0.0808**		**392.4656**	**392.4656**	**0.0118**	**0.0338**	**402.8335**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Unmitigated	0.0169	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.9900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**		**2.1000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.9900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		2.0000e-004	2.0000e-004	0.0000		2.1000e-004
Total	**0.0169**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.0000e-004**	**2.0000e-004**	**0.0000**		**2.1000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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

Roscoe Trunk Line Replacement Project - Regulating Stations

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2027
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	691.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Single Day Activity

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Off-road Equipment - Project Inventory

Trips and VMT - Project Inventory

Demolition -

Grading -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	MaterialExported	0.00	50.00
tblGrading	MaterialExported	0.00	200.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	HaulingTripNumber	5.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00

tblTripsAndVMT	WorkerTripNumber	8.00	40.00

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					
2023	0.7554	9.0554	9.1123	0.0352	1.8671	0.2838	2.0090	0.3766	0.2689	0.5103	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**0.7554**	**9.0554**	**9.1123**	**0.0352**	**1.8671**	**0.2838**	**2.0090**	**0.3766**	**0.2689**	**0.5103**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

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					
2023	0.7554	9.0554	9.1123	0.0352	1.2145	0.2838	1.3602	0.3119	0.2689	0.5009	0.0000	3,735.0148	3,735.0148	0.4032	0.4185	3,869.8128
Maximum	**0.7554**	**9.0554**	**9.1123**	**0.0352**	**1.2145**	**0.2838**	**1.3602**	**0.3119**	**0.2689**	**0.5009**	**0.0000**	**3,735.0148**	**3,735.0148**	**0.4032**	**0.4185**	**3,869.8128**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	34.96	0.00	32.30	17.17	0.00	1.85	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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Road Stripping	Demolition	10/9/2023	10/9/2023	5	1	
2	Shoring	Site Preparation	10/10/2023	10/10/2023	5	1	
3	Excavate	Grading	10/11/2023	10/11/2023	5	1	
4	Install Vault & Valves	Building Construction	10/12/2023	10/12/2023	5	1	
5	Refill Pit	Trenching	10/13/2023	10/13/2023	5	1	
6	Repave Road	Paving	10/14/2023	10/14/2023	6	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.02

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Road Stripping	Concrete/Industrial Saws	1	2.00	81	0.73
Road Stripping	Excavators	1	4.00	158	0.38
Road Stripping	Forklifts	1	2.00	89	0.20
Road Stripping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Shoring	Bore/Drill Rigs	1	2.00	221	0.50

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Shoring	Cranes	1	4.00	231	0.29
Shoring	Excavators	1	4.00	158	0.38
Shoring	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Excavate	Cranes	1	2.00	231	0.29
Excavate	Excavators	1	6.00	158	0.38
Excavate	Forklifts	1	2.00	89	0.20
Excavate	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Install Vault & Valves	Cranes	1	4.00	231	0.29
Install Vault & Valves	Forklifts	1	6.00	89	0.20
Install Vault & Valves	Generator Sets	1	6.00	84	0.74
Install Vault & Valves	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Refill Pit	Cement and Mortar Mixers	1	6.00	9	0.56
Refill Pit	Excavators	1	6.00	158	0.38
Refill Pit	Other Material Handling Equipment	1	6.00	168	0.40
Refill Pit	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Repave Road	Pavers	1	7.00	130	0.42
Repave Road	Paving Equipment	1	7.00	132	0.36
Repave Road	Rollers	1	7.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Road Stripping	4	40.00	0.00	20.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Shoring	4	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavate	4	40.00	0.00	40.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Install Vault & Valves	4	40.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Refill Pit	4	40.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repave Road	3	40.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Road Stripping - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0700	0.0000	1.0700	0.1620	0.0000	0.1620			0.0000			0.0000
Off-Road	0.2791	2.4281	3.9451	6.0900e-003		0.1227	0.1227		0.1155	0.1155		586.0152	586.0152	0.1489		589.7379
Total	**0.2791**	**2.4281**	**3.9451**	**6.0900e-003**	**1.0700**	**0.1227**	**1.1927**	**0.1620**	**0.1155**	**0.2775**		**586.0152**	**586.0152**	**0.1489**		**589.7379**

3.2 Road Stripping - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0406	2.7249	0.7062	0.0117	0.3501	0.0165	0.3666	0.0960	0.0158	0.1118		1,286.6750	1,286.6750	0.0707	0.2043	1,349.3318
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1782**	**2.8235**	**2.0385**	**0.0155**	**0.7972**	**0.0192**	**0.8164**	**0.2146**	**0.0183**	**0.2328**		**1,670.3657**	**1,670.3657**	**0.0809**	**0.2142**	**1,736.2166**

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					0.4173	0.0000	0.4173	0.0632	0.0000	0.0632			0.0000			0.0000
Off-Road	0.2791	2.4281	3.9451	6.0900e-003		0.1227	0.1227		0.1155	0.1155	0.0000	586.0152	586.0152	0.1489		589.7379
Total	**0.2791**	**2.4281**	**3.9451**	**6.0900e-003**	**0.4173**	**0.1227**	**0.5400**	**0.0632**	**0.1155**	**0.1786**	**0.0000**	**586.0152**	**586.0152**	**0.1489**		**589.7379**

3.2 Road Stripping - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Hauling	0.0406	2.7249	0.7062	0.0117	0.3501	0.0165	0.3666	0.0960	0.0158	0.1118		1,286.6750	1,286.6750	0.0707	0.2043	1,349.3318
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1782**	**2.8235**	**2.0385**	**0.0155**	**0.7972**	**0.0192**	**0.8164**	**0.2146**	**0.0183**	**0.2328**		**1,670.3657**	**1,670.3657**	**0.0809**	**0.2142**	**1,736.2166**

3.3 Shoring - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day								lb/day		
Fugitive Dust					5.6500e-003	0.0000	5.6500e-003	8.6000e-004	0.0000	8.6000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408		833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**5.6500e-003**	**0.1530**	**0.1587**	**8.6000e-004**	**0.1408**	**0.1417**		**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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					2.2100e-003	0.0000	2.2100e-003	3.3000e-004	0.0000	3.3000e-004			0.0000			0.0000
Off-Road	0.3617	3.5759	3.6121	8.6100e-003		0.1530	0.1530		0.1408	0.1408	0.0000	833.7074	833.7074	0.2696		840.4483
Total	**0.3617**	**3.5759**	**3.6121**	**8.6100e-003**	**2.2100e-003**	**0.1530**	**0.1552**	**3.3000e-004**	**0.1408**	**0.1411**	**0.0000**	**833.7074**	**833.7074**	**0.2696**		**840.4483**

3.3 Shoring - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

3.4 Excavate - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0226	0.0000	0.0226	3.4200e-003	0.0000	3.4200e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549		777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**0.0226**	**0.1684**	**0.1910**	**3.4200e-003**	**0.1549**	**0.1583**		**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Excavate - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.3500	2,573.3500	0.1414	0.4087	2,698.6635
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.0407**	**2,957.0407**	**0.1516**	**0.4185**	**3,085.5484**

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					8.8200e-003	0.0000	8.8200e-003	1.3400e-003	0.0000	1.3400e-003			0.0000			0.0000
Off-Road	0.3685	3.5070	4.8616	8.0400e-003		0.1684	0.1684		0.1549	0.1549	0.0000	777.9741	777.9741	0.2516		784.2644
Total	**0.3685**	**3.5070**	**4.8616**	**8.0400e-003**	**8.8200e-003**	**0.1684**	**0.1772**	**1.3400e-003**	**0.1549**	**0.1562**	**0.0000**	**777.9741**	**777.9741**	**0.2516**		**784.2644**

3.4 Excavate - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0812	5.4497	1.4123	0.0234	0.7002	0.0330	0.7332	0.1920	0.0316	0.2236		2,573.3500	2,573.3500	0.1414	0.4087	2,698.6635
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.2188**	**5.5483**	**2.7446**	**0.0272**	**1.1473**	**0.0357**	**1.1830**	**0.3105**	**0.0341**	**0.3446**		**2,957.0407**	**2,957.0407**	**0.1516**	**0.4185**	**3,085.5484**

3.5 Install Vault & Valves - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5955	5.8160	6.2013	0.0113		0.2772	0.2772		0.2627	0.2627		1,083.8910	1,083.8910	0.2200		1,089.3906
Total	**0.5955**	**5.8160**	**6.2013**	**0.0113**		**0.2772**	**0.2772**		**0.2627**	**0.2627**		**1,083.8910**	**1,083.8910**	**0.2200**		**1,089.3906**

3.5 Install Vault & Valves - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						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	0.0000
Vendor	0.0222	0.8037	0.3068	3.7300e-003	0.1281	3.8800e-003	0.1320	0.0369	3.7100e-003	0.0406		401.2406	401.2406	0.0134	0.0577	418.7822
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1599**	**0.9024**	**1.6391**	**7.4800e-003**	**0.5752**	**6.5800e-003**	**0.5818**	**0.1555**	**6.1900e-003**	**0.1617**		**784.9313**	**784.9313**	**0.0236**	**0.0676**	**805.6671**

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	0.5955	5.8160	6.2013	0.0113		0.2772	0.2772		0.2627	0.2627	0.0000	1,083.8910	1,083.8910	0.2200		1,089.3906
Total	**0.5955**	**5.8160**	**6.2013**	**0.0113**		**0.2772**	**0.2772**		**0.2627**	**0.2627**	**0.0000**	**1,083.8910**	**1,083.8910**	**0.2200**		**1,089.3906**

3.5 Install Vault & Valves - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0222	0.8037	0.3068	3.7300e-003	0.1281	3.8800e-003	0.1320	0.0369	3.7100e-003	0.0406		401.2406	401.2406	0.0134	0.0577	418.7822
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1599**	**0.9024**	**1.6391**	**7.4800e-003**	**0.5752**	**6.5800e-003**	**0.5818**	**0.1555**	**6.1900e-003**	**0.1617**		**784.9313**	**784.9313**	**0.0236**	**0.0676**	**805.6671**

3.6 Refill Pit - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938		1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**		**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Refill Pit - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1821**	**1.7061**	**1.9458**	**0.0112**	**0.7033**	**0.0105**	**0.7138**	**0.1923**	**9.9100e-003**	**0.2023**		**1,186.1719**	**1,186.1719**	**0.0370**	**0.1254**	**1,224.4493**

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	0.4919	4.1618	7.1665	0.0111		0.2097	0.2097		0.1938	0.1938	0.0000	1,058.9064	1,058.9064	0.3342		1,067.2602
Total	**0.4919**	**4.1618**	**7.1665**	**0.0111**		**0.2097**	**0.2097**		**0.1938**	**0.1938**	**0.0000**	**1,058.9064**	**1,058.9064**	**0.3342**		**1,067.2602**

3.6 Refill Pit - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	0.0445	1.6075	0.6135	7.4600e-003	0.2562	7.7700e-003	0.2640	0.0738	7.4300e-003	0.0812		802.4812	802.4812	0.0267	0.1155	837.5644
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1821**	**1.7061**	**1.9458**	**0.0112**	**0.7033**	**0.0105**	**0.7138**	**0.1923**	**9.9100e-003**	**0.2023**		**1,186.1719**	**1,186.1719**	**0.0370**	**0.1254**	**1,224.4493**

3.7 Repave Road - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054		965.8181	965.8181	0.3124		973.6272
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5042**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**		**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Road - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	0.4518	4.4589	6.3806	9.9800e-003		0.2232	0.2232		0.2054	0.2054	0.0000	965.8181	965.8181	0.3124		973.6272
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5042**	**4.4589**	**6.3806**	**9.9800e-003**		**0.2232**	**0.2232**		**0.2054**	**0.2054**	**0.0000**	**965.8181**	**965.8181**	**0.3124**		**973.6272**

3.7 Repave Road - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0000
Vendor	8.8900e-003	0.3215	0.1227	1.4900e-003	0.0512	1.5500e-003	0.0528	0.0148	1.4900e-003	0.0162		160.4962	160.4962	5.3500e-003	0.0231	167.5129
Worker	0.1376	0.0986	1.3323	3.7500e-003	0.4471	2.7000e-003	0.4498	0.1186	2.4800e-003	0.1211		383.6907	383.6907	0.0102	9.8600e-003	386.8849
Total	**0.1465**	**0.4201**	**1.4550**	**5.2400e-003**	**0.4984**	**4.2500e-003**	**0.5026**	**0.1333**	**3.9700e-003**	**0.1373**		**544.1869**	**544.1869**	**0.0156**	**0.0330**	**554.3977**

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	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

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		
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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.535658	0.065965	0.190922	0.126434	0.023737	0.006642	0.011305	0.008056	0.000938	0.000585	0.025742	0.000711	0.003305

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

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

RTLR Regulating Stations Construction GHG Emissions

Regulating Stations

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
Road Stripping								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	586.0	586.0	0.1		589.7	10.0	2.7
Total	0.0	586.0	586.0	0.1		589.7		0.0
Hauling		1,286.7	1,286.7	0.1	0.2	1,349.3	10.0	6.1
Vendor		0.0	0.0	0.0	0.0	0.0		
Worker		383.7	383.7	0.0	0.0	386.9	10.0	1.8
Total		1,670.4	1,670.4	0.1	0.2	1,736.2	10.0	7.9
	0.0	2,256.4	2,256.4	0.2	0.2	2,326.0		0.0
Shoring								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	833.7	833.7	0.3		840.4	20.0	7.6
Total	0.0	833.7	833.7	0.3		840.4	20.0	7.6
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		160.5	160.5	0.0	0.0	167.5	20.0	1.5
Worker		383.7	383.7	0.0	0.0	386.9	20.0	3.5
Total		544.2	544.2	0.0	0.0	554.4	20.0	5.0
	0.0	1,377.9	1,377.9	0.3	0.0	1,394.8		0.0
Excavate								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	778.0	778.0	0.3		784.3	90.0	32.0
Total	0.0	778.0	778.0	0.3		784.3	90.0	32.0
Hauling		2,573.4	2,573.4	0.1	0.4	2,698.7	90.0	110.2
Vendor		0.0	0.0	0.0	0.0	0.0		
Worker		383.7	383.7	0.0	0.0	386.9	90.0	15.8
Total		2,957.0	2,957.0	0.2	0.4	3,085.5	90.0	126.0
	0.0	3,735.0	3,735.0	0.4	0.4	3,869.8		0.0
Vault Installation								
Off-Road	0.0	1,083.9	1,083.9	0.2		1,089.4	90.0	44.5
Total	0.0	1,083.9	1,083.9	0.2		1,089.4	90.0	44.5
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		401.2	401.2	0.0	0.1	418.8	90.0	17.1
Worker		383.7	383.7	0.0	0.0	386.9	90.0	15.8
Total		784.9	784.9	0.0	0.1	805.7	90.0	32.9
	0.0	1,868.8	1,868.8	0.2	0.1	1,895.1		0.0

RTLR Regulating Stations Construction GHG Emissions

Refill Pit								
Off-Road	0.0	1,058.9	1,058.9	0.3		1,067.3	30.0	14.5
Total	0.0	1,058.9	1,058.9	0.3		1,067.3	30.0	14.5
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		802.5	802.5	0.0	0.1	837.6	30.0	11.4
Worker		383.7	383.7	0.0	0.0	386.9	30.0	5.3
Total		1,186.2	1,186.2	0.0	0.1	1,224.4	30.0	16.7
	0.0	2,245.1	2,245.1	0.4	0.1	2,291.7		0.0
Repave								
Off-Road	0.0	965.8	965.8	0.3		973.6	20.0	8.8
Paving			0.0			0.0	20.0	
Total	0.0	965.8	965.8	0.3		973.6	20.0	8.8
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		160.5	160.5	0.0	0.0	167.5	2.0	0.2
Worker		383.7	383.7	0.0	0.0	386.9	2.0	0.4
Total		544.2	544.2	0.0	0.0	554.4	20.0	5.0
	0.0	1,510.0	1,510.0	0.3	0.0	1,528.0		
	0.0	3,735.0	3,735.0	0.4	0.4	3,869.8		
	0.0	1,083.9	1,083.9	0.3	0.0	1,089.4		

E	110.1
H	116.3
V	30.2
W	42.5
	299.1

Total Construction MTCO2e	7,400.3
Annual Average MTCO2e	1057.188

RTLR Shallow Open-Trench Construction GHG Emissions

Shallow Mainline

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
Pavement Removal								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	311.5	311.5	0.1		313.5		0
Total	0.0	311.5	311.5	0.1		313.5	120.0	17.06538
Hauling		772.0	772.0	0.0	0.1	809.6	120.0	44.06741
Vendor		0.0	0.0	0.0	0.0	0.0	120.0	
Worker		191.8	191.8	0.0	0.0	193.4	120.0	10.52929
Total		963.9	963.9	0.0	0.1	1,003.0	120.0	54.5967
	0.0	1,275.4	1,275.4	0.1	0.1	1,316.6		0
Shoring								
Fugitive Dust			0.0			0.0	180	
Off-Road	0.0	578.7	578.7	0.2		583.4	180	47.62942
Total	0.0	578.7	578.7	0.2		583.4	180	47.62942
							180	
Hauling		0.0	0.0	0.0	0.0	0.0	180	
Vendor		160.5	160.5	0.0	0.0	167.5	180	13.67688
Worker		191.8	191.8	0.0	0.0	193.4	180	15.79394
Total		352.3	352.3	0.0	0.0	361.0	180	29.47082
	0.0	931.0	931.0	0.2	0.0	944.3		0
Excavate								
Fugitive Dust			0.0			0.0	300	
Off-Road	0.0	740.7	740.7	0.2		746.7	300.0	101.6099
Total	0.0	740.7	740.7	0.2		746.7	300.0	101.6099
Hauling		1,029.3	1,029.3	0.1	0.2	1,079.5	300.0	146.8914
Vendor		0.0	0.0	0.0	0.0	0.0	300.0	
Worker		191.8	191.8	0.0	0.0	193.4	300.0	26.32323
Total		1,221.2	1,221.2	0.1	0.2	1,272.9	300.0	173.2146
	0.0	1,961.9	1,961.9	0.3	0.2	2,019.6		0
Pipe Install								
Off-Road	0.0	928.1	928.1	0.2		933.5	300.0	127.0233
Total	0.0	928.1	928.1	0.2		933.5	300.0	127.0233
Hauling		0.0	0.0	0.0	0.0	0.0	300.0	
Vendor		160.5	160.5	0.0	0.0	167.5	300.0	22.7948
Worker		191.8	191.8	0.0	0.0	193.4	300.0	26.32323
Total		352.3	352.3	0.0	0.0	361.0	300.0	49.11803
	0.0	1,280.5	1,280.5	0.2	0.0	1,294.4		0

RTLR Shallow Open-Trench Construction GHG Emissions

Backfill

Off-Road	0.0	1,058.9	1,058.9	0.3		1,067.3	150.0	72.61525
Total	0.0	1,058.9	1,058.9	0.3		1,067.3		0
Hauling		0.0	0.0	0.0	0.0	0.0	150.0	
Vendor		200.6	200.6	0.0	0.0	209.4	150.0	14.24675
Worker		191.8	191.8	0.0	0.0	193.4	150.0	13.16162
Total		392.5	392.5	0.0	0.0	402.8	150.0	27.40836
	0.0	1,451.4	1,451.4	0.3	0.0	1,470.1		0

Pave

Off-Road	0.0	965.8	965.8	0.3		973.6	120.0	52.99565
Paving			0.0			0.0	120	
Total	0.0	965.8	965.8	0.3		973.6	120.0	52.99565
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		200.6	200.6	0.0	0.0	209.4	120.0	11.3974
Worker		191.8	191.8	0.0	0.0	193.4	120.0	10.52929
Total		392.5	392.5	0.0	0.0	402.8	120.0	21.92669
	0.0	1,358.3	1,358.3	0.3	0.0	1,376.5		
	0.0	1,961.9	1,961.9	0.3	0.2	2,019.6		
	0.0	1,058.9	1,058.9	0.3	0.0	1,067.3		

E	401.9
H	191.0
V	62.1
W	102.7
	757.6

RTLR Microtunnel Construction GHG Emissions

Microtunnel

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
Subsurface Exploration & Pavement Removal								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	851.9	851.9	0.2		857.7	150.0	58.36013
Total	0.0	851.9	851.9	0.2		857.7	150.0	58.36013
Hauling		643.3	643.3	0.0	0.1	674.7	150.0	45.90355
Vendor		0.0	0.0	0.0	0.0	0.0	150.0	
Worker		191.8	191.8	0.0	0.0	193.4	150.0	13.16162
Total		835.2	835.2	0.0	0.1	868.1	150.0	59.06517
	0.0	1,687.1	1,687.1	0.3	0.1	1,725.9		0
Install Sheet Pile Shoring								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	870.7	870.7	0.3		877.8	300.0	119.4431
Total	0.0	870.7	870.7	0.3		877.8	300.0	119.4431
Hauling		643.3	643.3	0.0	0.1	674.7	300.0	91.8071
Vendor		802.5	802.5	0.0	0.1	837.6	300.0	113.974
Worker		191.8	191.8	0.0	0.0	193.4	300.0	26.32323
Total		1,637.7	1,637.7	0.1	0.2	1,705.7	300.0	232.1043
	0.0	2,508.4	2,508.4	0.3	0.2	2,583.4		0
Shaft Excavation								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	1,006.8	1,006.8	0.3		1,015.0	450.0	207.1715
Total	0.0	1,006.8	1,006.8	0.3		1,015.0	450.0	207.1715
Hauling		3,216.7	3,216.7	0.2	0.5	3,373.3	450.0	688.5532
Vendor		0.0	0.0	0.0	0.0	0.0	450.0	
Worker		191.8	191.8	0.0	0.0	193.4	450.0	39.48485
Total		3,408.5	3,408.5	0.2	0.5	3,566.8	450.0	728.0381
	0.0	4,415.4	4,415.4	0.5	0.5	4,581.7		0
Install Casing & Pipeline								
Off-Road	0.0	2,300.2	2,300.2	0.4		2,311.2	450.0	471.7611
Total	0.0	2,300.2	2,300.2	0.4		2,311.2	450.0	471.7611
Hauling		0.0	0.0	0.0	0.0	0.0	450.0	
Vendor		802.5	802.5	0.0	0.1	837.6	450.0	170.961
Worker		191.8	191.8	0.0	0.0	193.4	450.0	39.48485
Total		994.3	994.3	0.0	0.1	1,031.0	450.0	210.4458
	0.0	3,294.6	3,294.6	0.5	0.1	3,342.2		0

RTLR Microtunnel Construction GHG Emissions

Backfill

Off-Road	0.0	1,058.9	1,058.9	0.3		1,067.3	300.0	145.2305
Total	0.0	1,058.9	1,058.9	0.3		1,067.3	300.0	145.2305
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		2,006.2	2,006.2	0.1	0.3	2,093.9	300.0	284.935
Worker		191.8	191.8	0.0	0.0	193.4	300.0	26.32323
Total		2,198.0	2,198.0	0.1	0.3	2,287.4	300.0	311.2582
	0.0	3,257.0	3,257.0	0.4	0.3	3,354.6		0

Repave

Off-Road	0.0	965.8	965.8	0.3		973.6	150.0	66.24456
Paving			0.0			0.0	150	
Total	0.0	965.8	965.8	0.3		973.6	150.0	66.24456
Hauling		0.0	0.0	0.0	0.0	0.0	150.0	
Vendor		802.5	802.5	0.0	0.1	837.6	150.0	56.98699
Worker		191.8	191.8	0.0	0.0	193.4	150.0	13.16162
Total		994.3	994.3	0.0	0.1	1,031.0	150.0	70.14861
	0.0	1,960.1	1,960.1	0.3	0.1	2,004.6		
Reg Max	0.0	4,415.4	4,415.4	0.5	0.5	4,581.7		
Local Max	0.0	2,300.2	2,300.2	0.4	0.0	2,311.2		

E	1,068.2
H	826.3
V	626.9
W	157.9
	2,679.3

RTLR Open Trench Construction GHG Emissions

RTLR Open Trench - Roscoe Blvd

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	Days	Total MTCO2e
Subsurface Exploration & Pavement Removal								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	777.8	777.8	0.2		783.6	300.0	106.6268
Total	0.0	777.8	777.8	0.2		783.6		0
Hauling		514.7	514.7	0.0	0.1	539.7	300.0	73.44568
Vendor		0.0	0.0	0.0	0.0	0.0	300.0	
Worker		383.7	383.7	0.0	0.0	386.9	300.0	52.64647
Total		898.4	898.4	0.0	0.1	926.6		0
	0.0	1,676.2	1,676.2	0.3	0.1	1,710.2		0
Shoring								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	833.7	833.7	0.3		840.4	600.0	228.7328
Total	0.0	833.7	833.7	0.3		840.4		0
Hauling		514.7	514.7	0.0	0.1	539.7	600.0	146.8914
Vendor		160.5	160.5	0.0	0.0	167.5	600.0	45.5896
Worker		383.7	383.7	0.0	0.0	386.9	600.0	105.2929
Total		1,058.9	1,058.9	0.0	0.1	1,094.1		0
	0.0	1,892.6	1,892.6	0.3	0.1	1,934.6		0
Excavation								
Fugitive Dust			0.0			0.0		
Off-Road	0.0	778.0	778.0	0.3		784.3	900.0	320.1631
Total	0.0	778.0	778.0	0.3		784.3		0
Hauling		2,573.4	2,573.4	0.1	0.4	2,698.7	900.0	1101.685
Vendor		0.0	0.0	0.0	0.0	0.0	900.0	
Worker		383.7	383.7	0.0	0.0	386.9	900.0	157.9394
Total		2,957.0	2,957.0	0.2	0.4	3,085.5		0
	0.0	3,735.0	3,735.0	0.4	0.4	3,869.8		0
Pipe Install								
Off-Road	0.0	1,298.0	1,298.0	0.3		1,304.7	900.0	532.6176
Total	0.0	1,298.0	1,298.0	0.3		1,304.7		0
Hauling		0.0	0.0	0.0	0.0	0.0	900.0	
Vendor		160.5	160.5	0.0	0.0	167.5	900.0	68.3844
Worker		383.7	383.7	0.0	0.0	386.9	900.0	157.9394
Total		544.2	544.2	0.0	0.0	554.4		0
	0.0	1,842.2	1,842.2	0.3	0.0	1,859.1		0

RTLR Open Trench Construction GHG Emissions

Backfill								
Off-Road	0.0	1,058.9	1,058.9	0.3		1,067.3	450.0	217.8457
Total	0.0	1,058.9	1,058.9	0.3		1,067.3	450.0	217.8457
Hauling		0.0	0.0	0.0	0.0	0.0	450.0	
Vendor		200.6	200.6	0.0	0.0	209.4	450.0	42.74024
Worker		383.7	383.7	0.0	0.0	386.9	450.0	78.96971
Total		584.3	584.3	0.0	0.0	596.3		0
	0.0	1,643.2	1,643.2	0.4	0.0	1,663.5		0
Paving								
Off-Road	0.0	1,103.8	1,103.8	0.4		1,112.7	300.0	151.4161
Paving			0.0			0.0		
Total	0.0	1,103.8	1,103.8	0.4		1,112.7	300.0	151.4161
Hauling		0.0	0.0	0.0	0.0	0.0		
Vendor		160.5	160.5	0.0	0.0	167.5	300.0	22.7948
Worker		383.7	383.7	0.0	0.0	386.9	300.0	52.64647
Total		544.2	544.2	0.0	0.0	554.4		0
	0.0	1,648.0	1,648.0	0.4	0.0	1,667.1		
	0.0	3,735.0	3,735.0	0.4	0.4	3,869.8		
	0.0	1,298.0	1,298.0	0.4	0.0	1,304.7		

E	1,557.4
H	1,322.0
V	179.5
W	605.4
	3,664.4

APPENDIX E

Noise and Vibration Assessment

Technical Memorandum

TO: Shannon Ledet
AECOM

FROM: Terry A. Hayes Associates Inc.

DATE: September 22, 2021

RE: Roscoe Trunk Line Replacement Project – Noise and Vibration Assessment

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed a Noise and Vibration Assessment for the Roscoe Trunk Line Replacement Project (RTLR project or proposed project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines. This Assessment is organized as follows:

- Introduction
- Project Description
- Noise and Vibration Topical Information
- Existing Setting
- Regulatory Framework
- Significance Thresholds
- Methodology
- Impact Assessment
- References

Project Description

Project Location and Setting

The Los Angeles Department of Water and Power (LADWP) proposes to replace approximately 21,000 linear feet of the existing Roscoe Trunk Line. The RTLR would parallel the existing Roscoe Trunk Line within Roscoe Boulevard from Mason Avenue on the west to Louise Avenue on the east, in the west San Fernando Valley area of Los Angeles. The RTLR would replace an existing high-density polyethylene trunk line that has experienced 15 leaks between 2004 and 2019. The condition of the existing line compromises the reliability of water supply in the area and also substantially increases long-term maintenance and repair activities. The proposed project would also include approximately 18,000 linear feet of a new 16-inch diameter distribution mainline, approximately 2,300 linear feet of a 12-inch diameter replacement distribution mainline, and two new pressure regulating stations. All these proposed facilities would be located underground within the road right-of-way.

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The RTLR project would be located in the western San Fernando Valley of the City of Los Angeles. Roscoe Boulevard, an east-west thoroughfare, forms the boundary between the communities of Northridge and Chatsworth to the north and Reseda and Winnetka to the south. Uses along Roscoe consist of a mix of single-family and multi-family residential, retail and service commercial, and institutional uses, including schools and the Northridge Hospital Medical Center. **Figure 1** shows the regional vicinity of the project site. **Figure 2** shows the RTLR project area. While the majority of the RTLR project would be located within Roscoe Boulevard, one proposed underground regulation station would be located within Penfield Avenue just north of Roscoe Boulevard, and the proposed 12-inch diameter replacement distribution mainline would be installed in Reseda Boulevard between Roscoe Boulevard and Bryant Street.

Proposed RTLR Components and Location

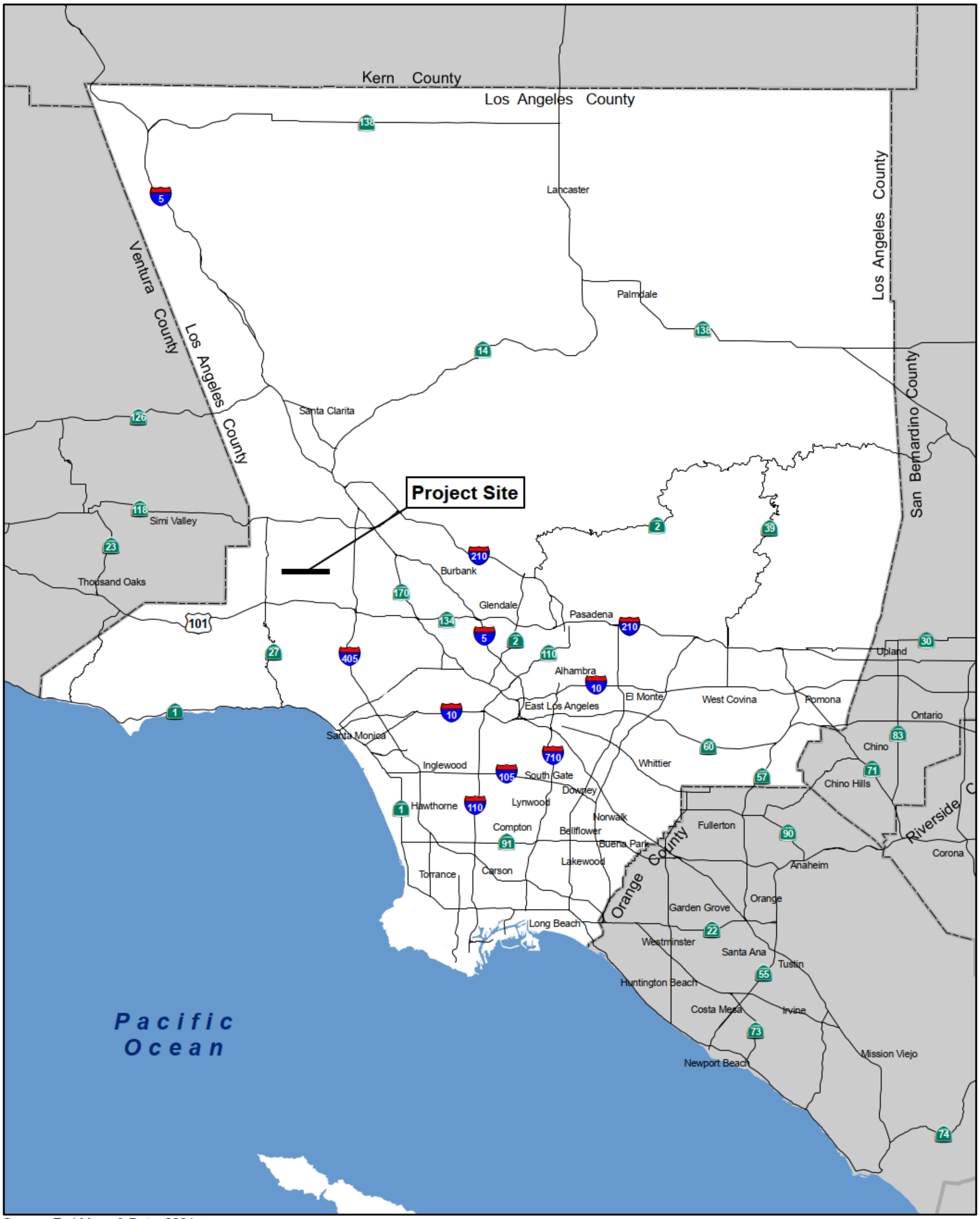
The primary component of the proposed project is a new underground 48-inch diameter welded steel or ductile iron trunk line, which would the replace the existing high-density polyethylene Roscoe Trunk Line. As previously discussed, the replacement line would be routed entirely within Roscoe Boulevard. On the east, the RTLR would connect directly to the existing 61-inch Encino Inlet Trunk Line and the 1,134-foot service zone at Louise Avenue. On the west, the RTLR would connect directly to a 48-inch stub-out from the new 54-inch De Soto Trunk Line Replacement and the 1,123-foot service zone near Mason Avenue.

Because the RTLR would interconnect directly to the 1,134-foot and 1,127-foot zones to provide system redundancy and operational flexibility, the proposed project would also include the installation of approximately 18,000 linear feet of underground 16-inch diameter distribution mainline, which would provide the direct service to the 947-foot zone currently provided by the existing Roscoe Trunk Line. The proposed 16-inch mainline would closely parallel the RTLR within Roscoe Boulevard from near Louise Avenue on the east to Penfield Avenue on the west.

To reduce the operating pressure between the higher service zones with which the RTLR would interconnect (i.e., the 1,134-foot and 1,127-foot zones) and the 947-foot zone, the proposed 16-inch mainline would connect to the RTLR downstream of the existing Roscoe & Louise Regulating Station and the proposed Roscoe & Reseda Regulating Station and Roscoe & Penfield Regulating Station, both of which would be installed as components of the proposed project. As is the case with the existing Roscoe & Louise Regulating Station, the two proposed regulating stations would be located entirely underground.

As part of the proposed project, approximately 2,300 linear feet of 12-inch diameter distribution mainline would also be installed within Reseda Boulevard, from Roscoe Boulevard to south of Bryant Street. In addition, 250 linear feet of 60-inch diameter trunk line would be installed in Louise Avenue north of Roscoe Boulevard for connection to the future proposed Havenhurst Trunk Line replacement.

In addition to the above, several appurtenant facilities necessary to support the operation of the proposed trunk line and mainlines would be installed. These include pressure relief stations, valves, flow meters, and maintenance holes. All these facilities would be located underground within the road right-of-way.



Source: Esri Maps & Data, 2021

Figure 1
Regional Map

Figure 2

Project Location Map

Project Construction – Construction Schedule

Construction for the proposed project is preliminarily scheduled to begin in mid-2024 and would take approximately 7 years to complete. In order to achieve this schedule, various sections of the project would be under construction concurrently in different locations within the project limits.

Project Construction – Trunk Line Open-Trench Construction

The majority of the RTLR would be installed through an open-trench method of construction whereby a trench is excavated in the roadway, pipeline sections are placed in the trench, the trench is backfilled, and the road is repaved. In order to achieve the open-trench construction in an effective, efficient, and safe manner, work zones would be established in the roadway within which open-trench construction activities could proceed unimpeded. Preliminarily, these work zones would range between approximately 800 and 1,200 feet in length.

The open-trench construction process would involve several steps. The initial step of the installation would be establishing the construction work zone. This would be accomplished by first installing traffic controls, including restriping of lanes, signage, and traffic signal modifications, as necessary, to merge traffic and direct it safely around the work zone. K-rails and other traffic barriers or markers would then be installed around the actual work zone to demarcate the zone and provide a safe working area. Placing the K-rail barriers would require the use of a forklift or other type of construction equipment. Mobilization would include delivering construction equipment and materials to the work zone and establishing field offices and other personnel and construction support facilities necessary for trunk line installation to proceed.

Once the work zone has been established, subsurface utility exploration would be conducted to verify the vertical and horizontal location of underground utilities that must be avoided, protected, or relocated during pipeline installation. This would involve core drilling a small-diameter hole in the pavement and removing soil with a vacuum truck to expose the utilities. Once the precise alignment of the trunk line has been established based on this exploration, the pavement would be cut along both edges of a given length of the trench using a pavement saw, and the pavement over the trench would be stripped using an excavator and a front loader. The pavement would be loaded on trucks and hauled from the site.

Because of the depth of excavation for the trunk line, shoring to support the walls of the trench would be required to provide a stable and safe working environment. The type of shoring system used would depend on soil conditions, but for environmental analysis purposes, it is assumed that steel H-beams supporting steel plates would be utilized. Prior to any excavation of the trench, the H-beams would be set as vertical piles along both edges of a length of trench, spaced to support the steel plates. Depending on soil conditions, the H-beam piles would be installed in pre-augered holes or by using a vibratory driver, or a combination of both. No impact piling-driving would be involved. Installing the piles would be accomplished using a drill rig and a hydraulic crane with various attachments, depending on the method of installation. These steps, from traffic control to installing the shoring piles, would be completed before any of the actual pipeline installation tasks would begin and would take approximately 1 month.

After the shoring piles are in place, work would begin on installing individual pipe segments. A trench approximately 12 feet wide and normally 10 feet deep would be excavated. This depth of trench would accommodate the 48-inch diameter trunk line, bedding material under the trunk line, and the minimum 5 feet of cover required over the line. However, in limited areas, to avoid relocating existing substructures, such as water, storm, or sanitary sewer lines crossing the RTLR alignment, the trench may need to be up to 20 feet deep.

The steel shoring plates would be lowered between the H-beams as the depth of the trench excavation increases. Approximately 40 linear feet of trench could be excavated and shored in a day. The excavated material would be loaded onto trucks parked adjacent to the trench and hauled from the work zone.

After a sufficient length of trench is excavated, a pipe segment would be placed in the trench by a crane and joined to the preceding pipe segment. Once the pipe joint is complete, cement slurry bedding material would be placed under the newly installed pipe segment to secure its position. Approximately two segments of pipe, which are nominally 20 feet in length, could be installed in a day. However, as this installation is occurring, the work on the succeeding sections of the pipeline alignment would be initiated, beginning with the excavation of the trench and placement of shoring. In this manner, the work associated with adjacent sections of the pipeline installation could overlap by a few days.

Once approximately 200 feet of pipeline have been installed, the trench would be partially backfilled with a soil-cement slurry, which would be delivered by concrete trucks. As discussed above, the trunk line would require a minimum of 5 feet of cover, which would be achieved with a trench depth of approximately 10 feet. However, because the proposed 16-inch distribution mainline would be installed in the same trench at a shallower depth, the trench would be only partially backfilled after installation of the trunk line.

The 16-inch mainline, which requires only a minimum of 3 feet of cover, would then be installed within the partially backfilled trench. It would be offset both horizontally and vertically from the trunk line to provide separation between the two pipelines to avoid potential future maintenance access conflicts. The mainline pipe segments would be installed in a similar fashion as the trunk line segments. The installation of the mainline would occur while the installation of the trunk line would be underway in forward areas of the trench.

After the mainline is installed, the trench would be backfilled to just below the top of pavement. After the trench backfilling, the H-beam piles and shoring plates would be extracted, and the pile holes would be backfilled. After several hundred feet of trench have been completely backfilled, the road would be repaved to the level of the surrounding road surface.

In addition to the pipe segments, various appurtenances, such as valves, meters, and maintenance holes, would also be installed as required. The general process for installation of these appurtenances would be similar to the pipe segments and would occur within the designated work zones. Depending on the length of the work zone and actual conditions, active construction within an individual work zone may range for approximately 8 to 12 months. The entire process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

The same basic process described above would also apply to the installation of the 60-inch line in Louise Avenue, which would extend approximately 250 feet north of Roscoe Boulevard.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the RTLR, and the 16-inch mainline within the same trench. These would include a drill rig, excavator, front loader, hydraulic cranes, forklifts, pavement saw, sweeper, utility trucks, and generators. However, these pieces of equipment serve specialized purposes during the pipeline installation and would generally only be operated for brief periods when required. For example, the saw would be used to cut the edges of the trench at the beginning of the construction process, the excavator would be used during trench excavation, and a crane would be used when installing the H-beam piles and the trunk line or mainline pipe segments. Therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill material, to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 18 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry. Assuming a 10-cubic yard concrete truck capacity, this may require up to about 5 concrete trucks per day to backfill the trench within 5 feet of the surface after the installation of the trunk line. These excavation and backfilling operations may occur simultaneously in different sections of the trench, which may result in a peak of approximately 23 truck trips per day within a given work zone.

Within a given work zone, the open-trench construction would require approximately 20 daily construction personnel for the trunk line and mainline installation. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Trunk Line Microtunneling

While the majority of the RTLR would be installed using the above described open-trench method of construction, in certain areas, a microtunneling construction method would be employed to install the trunk line. This would apply to areas where large substructures that cannot be readily relocated would preclude the excavation of a trench the depth and width required for the RTLR. These structures include major sewer, storm, natural gas, or water lines or other structures, including Aliso Canyon Wash, a large concrete-lined flood control channel that crosses beneath Roscoe Boulevard. Microtunneling involves installing the trunk line beneath these substructures at a depth sufficient to avoid direct conflicts as well as indirect impacts related to settlement of soil material above the tunnel. As the tunnel is bored, steel pipe casing is continually pushed forward into the tunnel by a hydraulic jacking system.

The substructures that would conflict with the RTLR installation cross Roscoe Boulevard, usually at major intersections, and run within Roscoe Boulevard, parallel with the RTLR alignment. Preliminarily, microtunneling spans along Roscoe Boulevard identified for the project would extend beneath White Oak Avenue; from east of Lindley Avenue to west of Reseda Boulevard; from east of Wilbur Avenue to west of Vanalden Avenue; beneath Tampa Avenue; and beneath Winnetka Avenue. The total length of pipe jacking on Roscoe Boulevard is preliminarily estimated at approximately 7,600 feet of the total 21,000-foot RTLR.

While direct disturbance of most the roadway surface within a tunneling span is avoided, the microtunneling method requires excavating shafts at either end of the span. Similar to open-trench construction, the microtunneling would require a work zone to accommodate various pieces of equipment involved in the tunneling and jacking process, delivery and haul trucks, and other construction support functions. Based on the width of these work zones, a minimum of one vehicle travel lane in each direction would be maintained on Roscoe Boulevard at all times to allow traffic to safely pass adjacent to the portion of the roadway under construction. The work zones surrounding each shaft would be approximately 350 feet long. They would overlap in location with the adjacent open-trench work zone, but both work zones would not be active at the same time.

The microtunneling operation would require a launching shaft at the beginning of the tunneling span and a receiving shaft at the end of the span. To avoid substructures and prevent damage from settlement of soil above the tunnel, the shafts would be deeper than the open-trench depth, at an average of approximately 40 feet. To accommodate the tunnel boring machine, the hydraulic jacking frame and casing/pipe segments, and space for crews and other equipment to maneuver, the launching shafts would be approximately 20 feet wide and 50 feet long. The receiving shafts would be approximately 20 feet wide and 30 feet long, large enough to receive the tunnel boring machine and allow it to be retrieved from the shaft.

The type of shoring system used to stabilize the shaft walls would depend on the soil and other conditions at each shaft location, but for environmental analysis purposes, it has been assumed that interlocking steel sheet piles would be used as shoring material to help control the intrusion of groundwater (which may be present at the depths of the shafts in various locations within the project limits), thereby minimizing the requirement for dewatering. After the road pavement above the shaft has been stripped, the sheet piles would be installed around the perimeter of the shaft prior to excavation. The pile installation would be achieved using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the shafts would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the shaft and hauled from the construction work zone to a local landfill. The establishment of the shafts and installation of tunneling equipment may take several weeks.

Several types of tunnel boring machines may be utilized for pipeline installations. However, for the purposes of environmental analysis, it has been assumed that a closed-face slurry shield microtunneling boring machine (MTBM) would be employed. This type of MTBM permits tunneling where groundwater may be encountered and limits groundwater intrusion into the launching and receiving shafts, minimizing the need for dewatering.

The microtunneling process would involve the installation of a steel casing pipe between the launching and receiving shafts. The MTBM would be lowered into the launching shaft and pushed forward by the hydraulic jacking frame as the cutter head of the MTBM removes soil at the leading edge of the tunnel. The slurry shield MTBM provides a closed environment within which soil particles are transferred into the interior of the cutter head, mixed with water that is pumped from the surface to the MTBM, and pumped through discharge lines to the surface as a slurry mixture. This process allows the MTBM to be advanced toward the receiving shaft by the hydraulic jack, with pipe casing segments, which are nominally 20 feet in length, continually lowered into the launching shaft and pushed forward behind the MTBM. Each new casing segment would be welded joined to the previous section to extend the casing. The slurry mixture pumped to the surface would be processed in a separation plant to remove the spoils and recycle the water through the MTBM. The spoils would be transferred to a dump truck to be hauled off site.

After the casing pipe is in place, the new trunk line pipe segments, which are also nominally 20 feet in length, would be pushed through from the launching shaft to the receiving shaft using the hydraulic jack. Radial spacers would be strapped to the segments to maintain clearance between the edges of the casing pipe. Grout would be injected to permanently fill the gap between the casing pipe and trunk line.

After the pipe is entirely installed within the tunnel, a section of pipe would be installed via an open-trench method to provide the vertical transition required to connect to the adjacent open-trench trunk line, which would have been installed at a shallower depth than the tunneled section of trunk line. The boring equipment would then be removed and transported to the succeeding tunnel span, if applicable. The shaft would be backfilled with soil-cement slurry to below top of pavement, the shoring piles would be removed, the road surface repaved and restriped, and the work zone barriers would be removed.

Because microtunneling is limited to a length of approximately 1,000 feet, in some longer spans identified for tunneling under the proposed project, it would be necessary to have intermediate shafts in addition to the shafts at the end points of the entire span.

The pipe casing would be installed in the tunnel at an average rate of about two to three segments per day, and the trunk line pipe segments would be installed at a similar rate. The actual time to complete a microtunneling installation for a given span would depend on factors such as soil conditions as well as the length of the span, with the total length of individual spans ranging from about 900 feet to over 3,500 feet in total length. However, the entire microtunneling operation at a given shaft location would be expected to range from approximately 8 months to 10 months. However, at intermediate shafts, where tunneling would occur sequentially in both directions, operations at a given shaft may extend to approximately 15 months.

Various pieces of construction equipment would be used to accomplish the pipe jacking installation, including an excavator, front loader, hydraulic crane, utility truck, generator, the hydraulic boring machine, tunnel ventilation systems, and the slurry separator plant. Trucks would haul excavated material from the shaft and the spoils from the boring operation as well as deliver construction materials. The peak of haul truck trips would occur during the excavation of the launching and receiving shafts, which may require up to about 22 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity.

The peak of delivery trucks would occur during the backfilling of the shafts with the soil-cement slurry. Assuming a 10-cubic yard truck capacity, this may require up to about 25 concrete trucks per day to backfill both shafts. The pipe jacking installation would require approximately 10 construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Construction – Distribution Mainline Open-Trench Installation

The majority of the 16-inch distribution mainline would be installed in conjunction with the open-trench installation of the trunk line. However, where the RTLR would be installed via the microtunneling method described above, the 16-inch distribution mainline could not be accommodated in the tunnel. Furthermore, since the 16-mainline must connect to existing distribution mainlines throughout the alignment to provide direct service to the 947-foot and 1,134-foot service zones, it could not be installed at the depths of the RTLR microtunneling. Therefore, within the microtunneling spans, the 16-inch mainline would be installed utilizing an open-trench method similar to that described above. The only exception to this would be at the Aliso Canyon Wash crossing, where the distribution line would be installed via microtunneling under the channel.

This would require the establishment of work zones within the roadway. However, because of the relatively smaller diameter of the mainline pipe and the shallower depth requirements, the trench would be substantially smaller, at 5 feet deep and 3 to 4 feet wide, depending on whether shoring is required. The work zone may also be correspondingly narrower, and, depending on the exact alignment of the pipeline, several vehicle travel lanes may be available during construction. However, a minimum of one travel lane in each direction would be maintained at all times adjacent to the portion of the roadway under construction. An average of approximately 100 linear feet of mainline pipe would be installed each week.

Various pieces of construction equipment would be used to accomplish the open-trench installation of the 16-inch mainline. These would include an excavator, front loader, small hydraulic crane, forklift, pavement saw, sweeper, utility trucks, and generators. However, as discussed above, these pieces of equipment would operate to perform specialized tasks, and, therefore, individual pieces of equipment would not operate continuously during the day and generally would not operate simultaneously.

The daily peak of haul truck trips would occur during the excavation of the trench, which may require up to 8 dump trucks trips per day, assuming a 14-cubic yard truck capacity. The peak of delivery trucks would occur during the backfilling of the trench with the soil-cement slurry, which would require about 5 concrete trucks per day, assuming a 10-cubic yard truck capacity. The excavation and backfilling operations may occur simultaneously in different segments of the trench, which would result in a peak of 13 truck trips per day within a given work zone.

The open-trench installation would require approximately 20 daily construction personnel in a given work zone. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

After completion of the work within a given work zone, equipment, materials, and facilities would be removed from the zone, the pavement would be restored and restriped, and the traffic barriers would be removed. Depending on the length of the work zone and actual conditions, active construction within an individual work zone would be approximately 4 months. The process would then be repeated for the next construction work zone, which may or may not be in an adjacent section of the roadway.

This same process described above would apply to the 12-inch mainline in Reseda Boulevard, where no trunk line installation would occur.

Project Construction – Regulating Stations

As mentioned above, two new regulating stations would be constructed as part of the proposed project. One would be located within Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station), and the other would be located within Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station). Although the dimensions of the two regulating station vaults would vary based on exact requirements, they would nominally require a pit approximately 25 feet deep, 20 feet wide, and 23 feet long to accommodate the vault set on base material as well as the space required to connect the pipe legs from the RTLR.

It has been assumed that interlocking corrugated steel sheet piles would be used as shoring material to stabilize the pit walls to limit groundwater intrusion, thereby minimizing the requirement for dewatering. After the road pavement has been stripped, the sheet piles would be installed prior to any excavation using a crane and a vibratory or press-in pile driver. No impact piling-driving would be involved. After the piles have been installed, the pit would be excavated, and the excavated material would be loaded onto trucks parked adjacent to the pit and hauled from the construction work zone to a local landfill.

Once the area is excavated, base material to support the vault would be laid down, the precast concrete vault would be placed, and the pipe legs with the regulator valves would be installed within the vault envelope and extended through the vault walls to a manifold pipe, which in turn would connect to the trunk line. Support equipment, such as ladders, catwalks, and ventilation would be installed within the vault. The pit would be backfilled with soil-cement slurry to below top of pavement and the road surface repaved.

The construction of each regulating station would take approximately 4 to 6 months to complete. Installation of the stations would not occur after the installation of the trunk line, and a separate construction zone within the road right-of-way would be established for this work. Various pieces of construction equipment would be used to construct the stations. These would include an excavator, front loader, hydraulic crane, sweeper, utility trucks, and generators. These pieces of equipment would be used only for certain tasks (i.e., to excavate the vault pit or set the vault in the pit), and they would not operate continuously during the day and generally would not operate simultaneously.

Trucks would haul debris and excavated material from the site and deliver construction materials to the site. The peak of haul truck trips would occur during the excavation of the trench, which may require up to about 20 dump trucks trips in a single day, assuming a 14-cubic yard truck capacity. The daily peak of delivery trucks would occur during the backfilling of the pit with the soil-cement slurry, which would require about 20 concrete trucks per day, assuming a 10-cubic yard truck capacity.

The regulating station construction would require approximately 20 daily construction personnel. Additional supervisory personnel may also be present at times. All personnel vehicle parking would be accommodated within the construction work zone boundaries. In addition, all materials laydown, equipment parking, and support facilities would also be accommodated within the work zone.

Project Operations

The RTLR would be located entirely underground and would not be visible. Activities associated with long-term operations and maintenance would be minimal, limited to scheduled maintenance or emergency repair. In addition, trunk line repair and maintenance activities would be substantially reduced after project implementation when compared to current requirements because of the poor condition of the existing Roscoe Trunk Line. No additional permanent LADWP workforce would be required to operate the RTLR.

Noise and Vibration Topical Information

The standard unit of measurement for noise is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," decreases by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level is 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet over a hard surface.

Noise generated by a mobile source decreases by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance. Generally, noise is most audible when the source is in a direct line-of-sight of the receiver. Solid barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not sufficiently high or long to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

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 rock blasting, pile driving, and heavy earth-moving equipment. 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 may affect concentration or disturb sleep. In addition, high levels of vibration may damage fragile buildings or interfere with equipment that is highly sensitive to vibration (e.g., electron microscopes).

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The VdB acts to compress the range of numbers required to describe vibration.[1]

[1]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

Existing Setting

To characterize the existing noise environment around the project site, ambient noise was monitored using a SoundPro DL Sound Level Meter on Tuesday, June 8, 2021, and Wednesday, June 9, 2021, from 10:00 a.m. to 3:30 p.m. in 15-minute increments. This time of day represents a typical construction time without the added noise source of peak hour traffic. Monitored noise levels ranged from 50.6 to 73.9 dBA L_{eq}. Traffic was the primary source of noise at each site. The monitoring locations are shown in **Figure 3A** through **3C** and monitored noise levels are shown in **Table 1**.

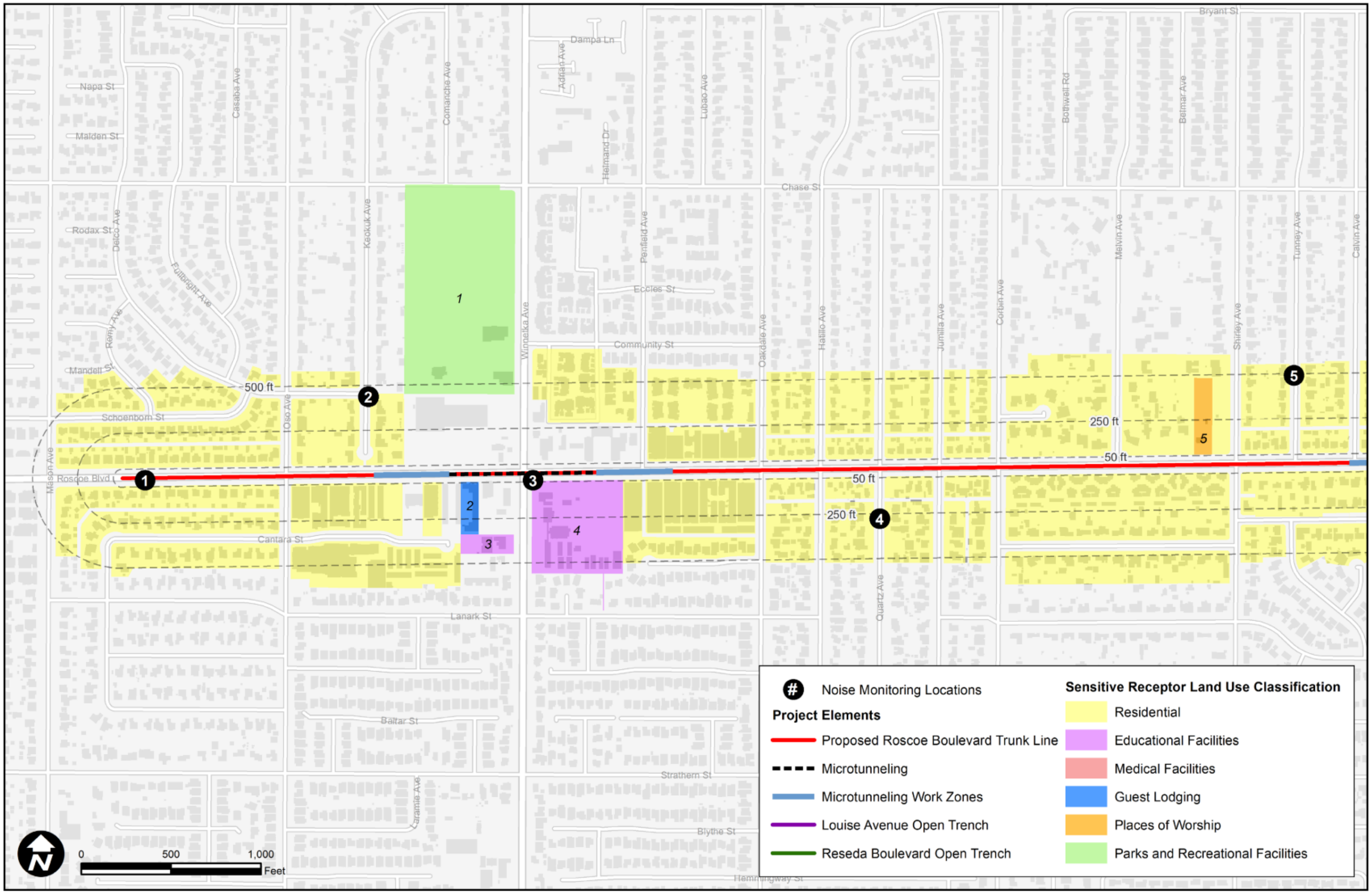
TABLE 1: EXISTING AMBIENT NOISE LEVELS AT MONITORING LOCATIONS

Noise Monitoring Site (Figure 3A – 3C)	Noise Monitoring Location	Noise Level (dBA, L_{eq})
1	Residences (20363 Roscoe Blvd.)	71.0
2	Residences (Keokuk Ave. and Community St.)	56.0
3	Roscoe Blvd. and Winnetka Ave.	71.2
4	Residences (8239 Quartz Ave.)	60.6
5	Residences (8343 Tunney Ave.)	54.2
6	Roscoe Blvd. and Tampa Ave.	71.3
7	Residences (Vanalden Ave. and Cantara St.)	57.9
8	Roscoe Blvd. at Miller Career and Transition Center	73.9
9	Residences (8217 Geyser Ave.)	54.1
10	Roscoe Blvd. at Northridge Hospital Medical Center	72.4
11	Residences (8217 Garden Grove Ave.)	50.6
12	Residences (Burton St. and Jamieson Ave.)	55.7
13	Residences (8336 White Oak Ave.)	58.8
14	Residences (17501 Burton St.)	55.6
15	Roscoe Blvd. at St. Mary and St. Athanasius Coptic Orthodox Church	73.7

SOURCE: TAHA, 2021.

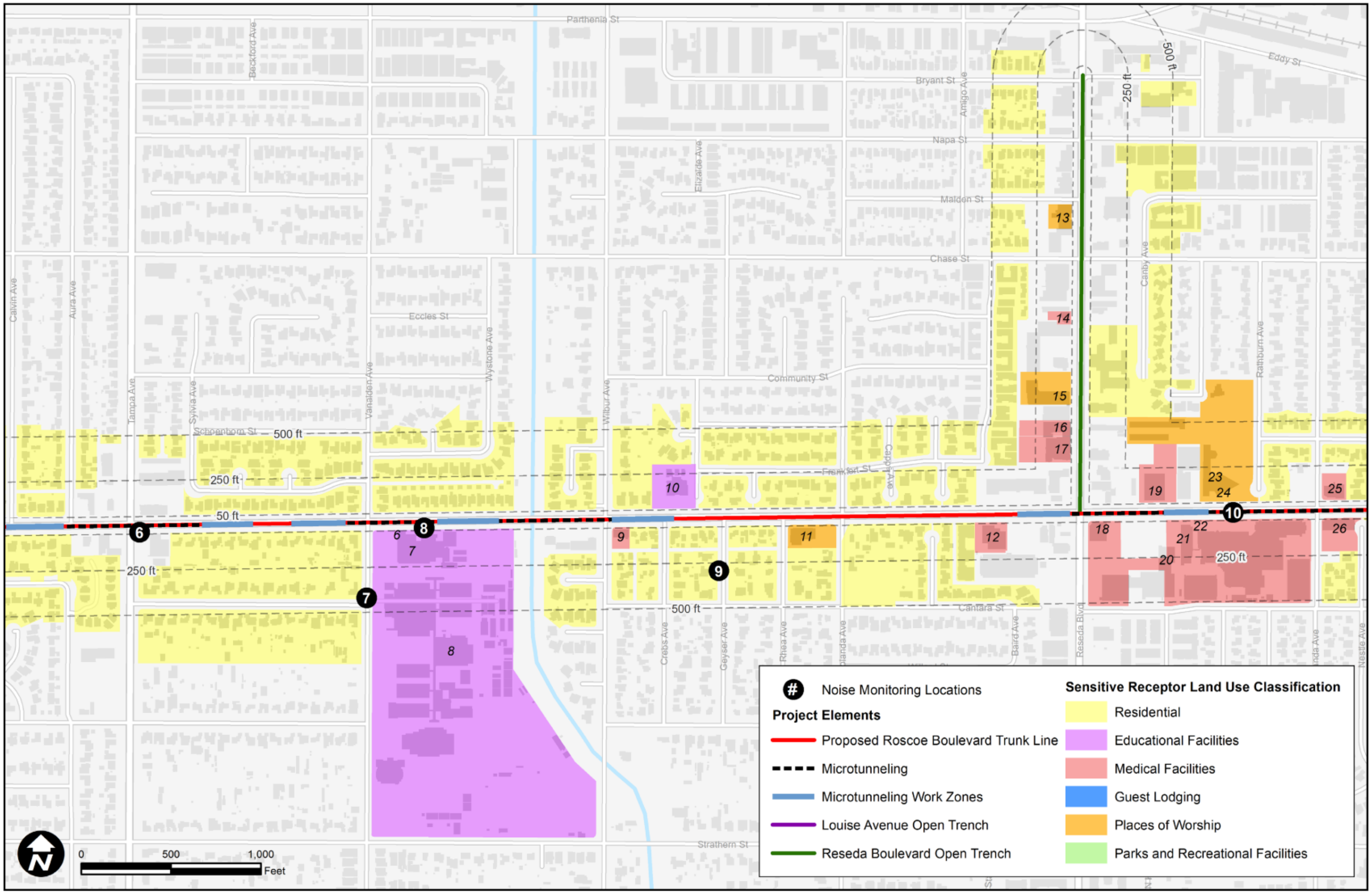
The area surrounding the RTLR project is characterized by low-rise single and multi-family residential structures, retail and service commercial uses, and institutional buildings including schools, medical facilities, and places of worship. Sensitive receptors are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land, and typically include residences, medical facilities, places of worship, guest lodging, schools, and parks. As shown in **Figure 3A** through **Figure 3C**, sensitive receptors are located within 500 feet of the proposed construction activities. In addition, non-residential sensitive receptors are identified in **Table 2**.

TABLE 2: NON-RESIDENTIAL SENSITIVE RECEPTORS	
Figure 3A - 3C ID. No.	**Sensitive Receptor**
1	Winnetka Recreation Center
2	Paradise - Lodge
3	Greene Gables Pre-School and Elementary School
4	Winnetka Avenue Elementary School
5	Salon del Reino de Los Testigos de Jehova
6	Miller Career and Transition Center
7	Joaquin Miller High School
8	Cleveland High School
9	Sterling Smile Dental Care
10	Valley International Preparatory High School
11	Valley Hindu Temple
12	Medical Park Plaza
13	Centro Apostólico Aposento Alto
14	Northridge Multispecialty Medical Offices
15	The Redeemed Christian Church of God
16	Valley Ace Dental Group
17	Endeavor Surgical Center
18	Facey Medical Group
19	Northridge Medical Center
20	Dignity Health Medical Group - Northridge Family Medicine
21	Family Medicine Associates
22	Dignity Health - Northridge Hospital Medical Center
23	Magnolia Science Academy 7
24	Lifehouse Church
25	YouR Dental Group
26	Adamian Orthodontics
27	Northridge Middle School
28	Wonder Place Daycare
29	Northridge Kidney Center
30	PETITE SCHOOL HOUSE
31	St Mary & St Athanasius Coptic Orthodox Church
32	St. Mary School
33	Spirit of Hope Church
34	Cedars Assisted Living
35	Faith Bible Church-Northridge
36	Valley Korean Bible Church
SOURCE: TAHA, 2021.	



Source: TAHA, 2021.

FIGURE 3A
NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS
VIEW 1 - MASON AVE TO CALVIN AVE



Source: TAHA, 2021.

Roscoe Trunk Line Replacement Project
Noise and Vibration Assessment

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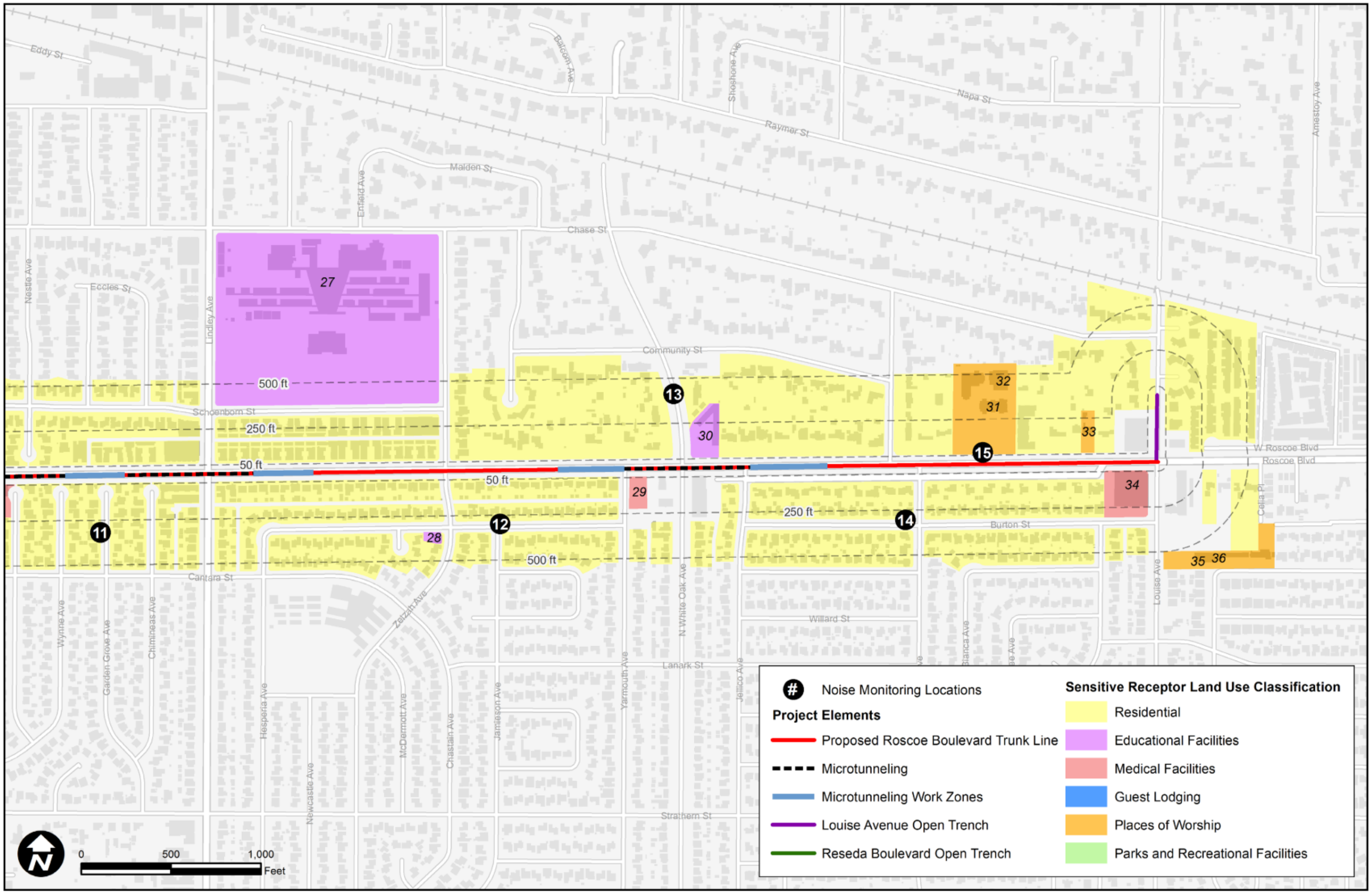
FIGURE 3B

NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS
VIEW 2 - CALVIN AVE TO NESTLE AVE



Source: TAHA, 2021.

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TAHA 2021-027

Roscoe Trunk Line Replacement Project
Noise and Vibration Assessment

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FIGURE 3C

NOISE MONITORING LOCATIONS AND SENSITIVE RECEPTORS
VIEW 2 - NESTLE AVE TO LOUISE AVE

Regulatory Framework

Noise

Federal. The Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the United States Environmental Protection Agency (USEPA) determined that subjective issues such as noise would be better addressed at local levels of government, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies. Consequently, in 1982, responsibilities for regulating noise control policies were transferred to specific federal agencies, and state and local governments. However, noise control guidelines and regulations contained in the USEPA rulings in prior years remain in place.

State. The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles and occupational noise control are not applicable to planning efforts, nor are these areas typically subject to CEQA analysis.

Local. As discussed above, the proposed project facilities would be located entirely underground and therefore would not create perceptible noise during operation. In addition, trunk line maintenance and repair activities, and the noise associated with these activities, would be reduced from current conditions after project implementation. Therefore, the following summary of local regulations focuses on those that pertain to noise that would be created by project construction activities.

The City of Los Angeles has established policies and regulations concerning the generation and control of noise that could adversely affect its citizens and noise-sensitive land uses. Regarding construction, Los Angeles Municipal Code (LAMC) Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) states that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m. on Monday through Friday since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment, or other place of residence. Further, no person, other than an individual homeowner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday, nor at any time on any Sunday or on a federal holiday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

LAMC Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise-reduction device or techniques during the operation of equipment.

Vibration

The City has not established significance thresholds related to vibration. In the absence of City thresholds, Federal Transit Administration (FTA) guidance may be used to assess the potential for vibration-related damage and annoyance.[2] For damage, the impact criteria are established based on the structural foundation of the potentially impacted building. Site visits indicate that residential buildings near the project site are generally constructed with non-engineered timber and masonry, and larger buildings (such as hospitals) near the project

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[2]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

site are constructed with reinforced-concrete, steel or timber. Vibration levels that exceed a peak particle velocity (PPV) of 0.2 inches per second could potentially damage non-engineered timber and masonry buildings and vibration levels that reach 0.5 inches per second could potentially damage reinforced-concrete, steel, or timber buildings. Historic uses are held to a vibration damage threshold of 0.12 inches per second, as they are more sensitive to vibration damage than newer structures. The most stringent annoyance criteria related to annoyance is 65 VdB for buildings subject to frequent vibration events (e.g., multiple equipment passbys). The frequent event annoyance criteria for residences and institutional land uses with primarily daytime use are 72 and 75 VdB, respectively.

Significance Thresholds

Noise

Because project operations would not create perceptible noise and noise-generating maintenance and repair activities would be reduced after project implementation, this assessment only considers construction noise. The assessment was undertaken to determine whether construction activities for the proposed project would have the potential to result in significant environmental impacts related to noise or vibration in the context of the Appendix G Environmental Checklist criteria of the CEQA Guidelines. Implementation (i.e., construction) of the proposed project may result in a significant environmental impact related to noise and vibration if the proposed project would 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;
b) Generation of excessive ground-borne vibration or ground-borne noise levels; and/or
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.

The proposed project would exceed the local standards and substantially increase temporary construction noise levels if construction activities would occur within 500 feet of a noise-sensitive use and outside the hours allowed in the LAMC. The allowable hours of construction in the LAMC include 7:00 a.m. to 9:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. on Saturday. In addition, the LAMC states that equipment noise levels should not exceed 75 dBA L_{eq} unless technically infeasible.

Vibration

Because project operations would not create perceptible vibration and vibration-generating maintenance and repair activities would be reduced after project implementation, this assessment only consider construction vibration. The construction--+related vibration analysis considers the potential for building damage and annoyance. Maximum vibration levels were assessed based on frequent vibration events happening more than 70 times in one day, which would be consistent with the movement of construction equipment. The proposed project would result in a significant construction vibration impact if:

- Vibration levels would exceed 0.12 inches per second at historic structures.
- Vibration levels would exceed 0.2 inches per second at non-historic structures constructed of non-engineered timber and masonry.
- Vibration levels would exceed 0.5 inches per second at non-historic structures constructed of reinforced-concrete, steel, or timber.
- Vibration levels would exceed 65 VdB at sensitive buildings, such as recording studios and medical facilities.

Methodology

Noise

The noise and vibration analyses consider construction sources. Noise levels associated with typical construction equipment were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[3] This model predicts noise from construction based on a compilation of empirical data and the application of acoustical propagation formulas. Maximum equipment noise levels were adjusted based on anticipated percent of use. Combined construction activity noise levels were estimated by combining anticipated equipment for each activity using RCNM. The projected noise level during the construction period at receptors was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level.

According to California Department of Transportation (Caltrans) guidance, air temperature and humidity affect molecular absorption differently depending on the frequency spectrum and can vary significantly over long distances in a complex manner. Molecular absorption in air also reduces noise levels with distance. However, according to Caltrans, this phenomenon only accounts for about 1 dBA per 1,000 feet, which is an inaudible and negligible difference in noise levels. Noise levels for this analysis have been estimated using a decrease of 6 dBA over hard surfaces for each doubling of the distance. The methodology and formulas obtained from the Caltrans Technical Noise Supplement can be viewed below.

(1) Noise Distance Attenuation Formula: $dBA_2 = dBA_1 + C \times LOG_{10} (D_1/D_2)$

Where:

dBA_1 *= Noise level at the reference distance of 50 feet*

dBA_2 *= Noise level at the receptor*

C = Coefficient for hard ground or soft ground

Hard ground C = 20
Soft ground C = 25

D_1 *= Reference distance (50 feet)*

D_2 *= Distance from source to receptor (measured distance)*

(2) Logarithmic Noise Level Addition Formula: $Ns = 10*LOG_{10}((10^{\wedge}(N1/10))+(10^{\wedge}(N2/10)))$

Where:

Ns = Noise level Sum

N1 = Noise level one

N2 = Noise level two

Vibration

Vibration levels were estimated using example vibration levels and propagation formulas provided by FTA.[4] The methodology and formulas obtained from the FTA Transit Noise and Vibration Assessment guidance can

[3]FHWA, *Roadway Construction Noise Model*, Version 1.1, August 2008.
[4]FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

be viewed below. Vibration damage is assessed using formula (3) and vibration annoyance is assessed using formula (4).

(3) *Vibration Damage Attenuation Formula:* $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

Where:

PPV_{equip} = *Peak particles velocity in inches per second of the equipment adjusted for distance*

PPV_{ref} = *Reference vibration level in inches per second at 25 feet*

D = *Distance from the equipment to the receptor in feet*

(4) *Vibration Annoyance Attenuation Formula:* $Lv_{equip} = Lv_{ref} - 30 \times LOG\ (D/25)$

Where:

Lv_{equip} = *Vibration level in vibration decibels of equipment adjusted for distance*

Lv_{ref} = *Reference vibration level in vibration decibels at 25 feet*

D = *Distance from the equipment to the receptor in feet*

Impact Assessment

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

Noise impacts from construction of the proposed project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in **Table 3**. Noise levels from individual pieces of equipment typically are between 63.2 and 82.6 dBA L_{eq} at 50 feet. The Micro Bore Tunneling Machine (MBTM) would not generate aboveground noise.

TABLE 3: NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Construction Equipment	**Noise Level at 50 feet (dBA)**
Auger Drill Rig	77.4
Concrete Mixer Truck	74.8
Concrete Saw	82.6
Crane	72.6
Excavator	76.7
Forklift	63.2
Front End Loader	75.1
Generator	77.6
Haul Truck	72.5
Hydraulic Pump in Pipe Jacking Plant	66.3
Micro Bore Tunneling Machine (MBTM)	0.0
Paver	74.2
Roller Compactor	73.0
Slurry Separator Plant	78.0
Vacuum Excavator (Vac-truck)	81.3
Vacuum Street Sweeper	71.6
Ventilation Fan	78.9
Vibratory or Press in Driver	78.9
Welder / Torch	70.0
SOURCE: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, 29 April 2016; Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008; *Noise Levels of Lift Trucks*, 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm; Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, 21 June 2010.	

To more accurately characterize construction-period noise levels, the noise levels shown in **Table 4** take into account the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected. Some pieces of equipment would be used only for certain tasks (e.g., concrete saw to cut pavement, an excavator would only be used to excavate trenches and shafts), and they would not operate continuously during the day and generally would not operate simultaneously. Therefore, combined noise levels take into account only construction equipment that would likely be operated simultaneously.

TABLE 4: PHASED CONSTRUCTION NOISE LEVELS	
Construction Phases and Equipment	**Noise Level at 50 feet (dBA, L_{eq})**
OPEN-TRENCH SITE PREPARATION	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
OPEN-TRENCH EXCAVATION AND SHORING	
Crane/a/	72.6
Excavator/a/	76.7

TABLE 4: PHASED CONSTRUCTION NOISE LEVELS	
Construction Phases and Equipment	**Noise Level at 50 feet (dBA, L_{eq})**
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
OPEN-TRENCH PIPE INSTALLATION	
Crane/a/	72.6
Generator/a/	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
OPEN-TRENCH ROADWAY RESTORATION	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Open-Trench Roadway Restoration Combined	**76.7**
TRUNK LINE MICROTUNNELING SITE PREPARATION	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
TRUNK LINE MICROTUNNELING SHAFT EXCAVATION	
Crane/a/	72.6
Vibratory or Press in Driver/a/	78.9
Excavator	76.7
Front End Loader	75.1
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
TRUNK LINE MICROTUNNELING	
Generator/a/	77.6
Hydraulic Pump in Pipe Jacking Plant/a/	66.3
Slurry Separator Plant/a/	78.0
Ventilation Fan/a/	78.9
Crane	72.6
Micro Bore Tunneling Machine (MBTM)	0.0
Trunk Line Microtunneling Combined	**83.1**
TRUNK LINE MICROTUNNELING SHAFT BACKFILLING	
Concrete Mixer Truck/a/	74.8
Crane/a/	72.6
Trunk Line Microtunneling Backfilling Combined	**76.8**
TRUNK LINE MICROTUNNELING ROADWAY RESTORATION	
Paver/a/	74.2
Roller Compactor/a/	73.0
Forklift	63.2
Trunk Line Microtunneling Roadway Restoration Combined	**76.7**

TABLE 4: PHASED CONSTRUCTION NOISE LEVELS	
Construction Phases and Equipment	**Noise Level at 50 feet (dBA, L_{eq})**
DISTRIBUTION MAINLINE OPEN-TRENCH SITE PREPARATION	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Distribution Mainline Site Preparation Combined	**79.0**
DISTRIBUTION MAINLINE OPEN-TRENCH SITE EXCAVATION AND SHORING	
Excavator/a/	76.7
Front End Loader/a/	75.1
Auger Drill Rig	77.4
Distribution Mainline Open-Trench Site Excavation and Shoring Combined	**79.0**
DISTRIBUTION MAINLINE OPEN-TRENCH INSTALLATION	
Crane/a/	72.6
Generator/a/	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Distribution Mainline Open-Trench Installation Combined	**78.8**
PRESSURE REGULATION STATIONS CONSTRUCTION	
Crane/a/	72.6
Excavator/a/	76.7
Front End Loader/a/	75.1
Generator/a/	77.6
Concrete Pump Trucks	74.4
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Welder / Torch	70.0
Pressure Regulation Stations Construction Combined	**81.9**

/a/ Construction equipment that would be used simultaneously during construction phase and that would create the loudest noise level associated with the phase.

SOURCE: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor*, 29 April 2016. Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008; *Noise Levels of Lift Trucks*, 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm.; Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, 21 June 2010.

Open Trench Construction Noise

The RTLR, 16-inch distribution mainline, 12-inch distribution line along Reseda Boulevard, and the 60-inch trunk line along Louise Avenue would be installed using an open-trench method of construction. During open-trench construction, a concrete saw would generate the loudest noise levels at approximately 82.6 dBA L_{eq}. However, the concrete saw would only be used for very brief periods of time and during the early stages of open-trench construction. Therefore, the reference noise level for open-trench construction would be more typically represented by the operations of an excavator and front loader simultaneously, which would result in a combined noise level of approximately 79.9 dBA L_{eq}.

Table 5 presents the estimated maximum construction noise levels related to open-trench construction for the RTLR and 16-inch distribution mainline along Roscoe Boulevard. **Table 6** presents the estimated construction noise levels for the 12-inch distribution mainline along Reseda Boulevard and **Table 7** presents construction noise levels for the 60 inch trunk line along Louise Avenue. Construction activities would occur Monday through Friday, and workers would typically be onsite for eight hours per day from 7:00 a.m. to ending by late afternoon. No work outside of these hours, or work on weekends or national holidays, is anticipated. Construction activity would therefore comply with the allowable hours of construction in the LAMC, including 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. on Saturday, and no construction activity on Sundays or federal holidays. The LAMC limits equipment noise levels to 75 dBA L_{eq} unless technically infeasible. Noise levels would exceed 75 dBA at first row sensitive receptors, and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 5: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS – ROSCOE BOULEVARD

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold? (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Northridge Hospital	60	72.4	78.3	Yes
Valley Hindu Temple	60	73.9	78.3	Yes
Paradise Lodge	70	71.2	77.0	Yes
Residences between Mason Avenue and Winnetka Ave.	75	71.0	76.4	Yes
Residences between Winnetka Ave. and Corbin Ave	75	71.2	76.4	Yes
Residences between Corbin Ave. and Tampa Ave.	75	71.3	76.4	Yes
Residences between Tampa Ave. and Reseda Blvd.	75	73.9	76.4	Yes
Residences between Reseda Blvd. and White Oak Ave.	75	72.4	76.4	Yes
Residences between White Oak Ave. and Celia Pl.	75	73.7	76.4	Yes
Miller Career and Transition Center	75	73.9	76.4	Yes
Lifehouse Church	90	72.4	74.8	No
Residences between White Oak Ave. and Louise Ave. Southern Side	100	73.7	73.9	No
Petite Schoolhouse	125	58.8	71.9	No
Valley International Preparatory High School	130	73.9	71.6	No
Spirt of Hope Church	150	73.7	70.4	No
Residences between Winnetka Ave. Elementary School	200	71.2	67.9	No
St. Mary and St. Anthanasius Coptic Orthodox Church	270	73.7	65.3	No
SECOND BUILDING ROW RECEPTORS				
Residences between Mason Ave and Winnetka Ave.	200	56.0	63.4	No
Residences between Winnetka Ave. and Corbin Ave.	200	60.6	63.4	No
Residences between Corbin Ave. and Tampa Ave.	200	54.2	63.4	No
Residences between Tampa Ave. and Aliso Canyon Wash	200	57.9	63.4	No
Residences between Aliso Canyon Wash and Reseda Blvd.	200	54.1	63.4	No
Residences between Reseda Blvd. and Lindley Ave.	200	50.6	63.4	No
Residences between Lindley Ave. and White Oak Ave.	200	55.7	63.4	No
Residences between White Oak Ave. and Celia Pl.	200	55.6	63.4	No

TABLE 5: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS – ROSCOE BOULEVARD

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold? (75 dBA, L_{eq})
Residences between White Oak Ave. and Louise Ave. Southern Side	225	55.6	62.3	No
Green Gables Pre-School and Elementary School	350	71.2	58.5	No
Cleveland High School	350	57.9	58.5	No
Magnolia Science Academy 7	400	72.4	57.3	No
St. Mary School	400	55.6	57.3	No
Winnetka Recreation Center	450	56.0	56.3	No
Faith Bible Church Northridge	520	55.6	55.1	No
THIRD BUILDING ROW RECEPTORS				
Residences between Mason Ave. and Winnetka Ave.	400	56.0	55.8	No
Residences between Winnetka Ave. and Corbin Ave.	400	60.6	55.8	No
Residences between Corbin Ave. and Tampa Ave.	400	54.2	55.8	No
Residences between Tampa Ave. and Aliso Canyon Wash	400	57.9	55.8	No
Residences between Aliso Canyon Wash and Reseda Blvd.	400	54.1	55.8	No
Residences between Reseda Blvd. and Lindley Ave.	400	50.6	55.8	No
Residences between Lindley Ave. and White Oak Ave.	400	55.7	55.8	No
Residences between White Oak Ave. and Celia Pl.	400	55.6	55.8	No
Residences between White Oak Ave. and Celia Pl.	425	55.6	55.3	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

TABLE 6: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS – RESEDA BOULEVARD

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Residences east of Reseda Blvd. approximately 480 feet north of Roscoe Blvd.	150	72.4	70.4	No
SECOND BUILDING ROW RECEPTORS				
Magnolia Science Academy 7	270	56.0	60.8	No
Residences to the east and west of Reseda Blvd.	350	56.0	58.5	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

TABLE 7: OPEN TRENCH CONSTRUCTION NOISE LEVELS AT RECEPTORS – LOUISE AVENUE				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences adjacent to the east and west of Louise Ave.	60	58.8	78.3	Yes
Cedars Assisted Living	70	73.7	77.0	Yes
Residences to the southeast and southwest	330	73.7	63.5	No
Residences to the south	370	58.8	62.5	No
Residences to the north	400	58.8	61.8	No
SECOND BUILDING ROW RECEPTORS				
Residences	200	56.0	63.4	No
Faith Bible Church Northridge	500	58.8	55.4	No
THIRD BUILDING ROW RECEPTORS				
Residences	300	56.0	58.3	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

Microtunneling Construction Noise

Microtunneling would be initiated in certain segments to avoid conflicts with existing substructures, which include major sewer, storm, and water lines. Microtunneling would be required along Roscoe Boulevard at the intersections with Winnetka Avenue, Tampa Avenue, Reseda Boulevard, and White Oak Avenue as well as the crossing of Aliso Canyon Wash. Microtunneling would require excavating shafts at either end of the span with work zones of approximately 350 feet around the shafts. The segment from Reseda Boulevard to Lindley Avenue would require two intermediate shafts due to the length of that segment. Noise generation would be concentrated around the shafts which would be open air and would include some pieces of equipment (e.g., crane, slurry separator plant) aboveground. The underground component of the microtunneling process would use a MBTM, which would not generate aboveground noise. Microtunneling would typically be represented by the simultaneous operation of a generator, hydraulic pump associated with the pipe jacking plant, slurry separator plant, and a ventilation fan which would generate a combined noise level of approximately 83.1 dBA L_{eq}. **Table 8** through **Table 12** present the estimated noise levels at the sensitive receptors nearest to each microtunneling shaft location. Noise levels would exceed 75 dBA at first row sensitive receptors, and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 8: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – WINNETKA AVENUE				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Paradise Lodge	50	71.2	83.1	Yes
Residences along Roscoe Blvd. to the west	60	71.2	81.5	Yes
Residences along Roscoe Blvd. to the east	150	71.2	73.5	No
Winnetka Avenue Elementary School	190	71.2	71.5	No
Residences to the west	250	71.2	69.1	No
SECOND BUILDING ROW RECEPTORS				
Residences along Roscoe Blvd. to the east	270	71.2	64.0	No
Residences to the north and northeast	270	56.0	64.0	No
Greene Gables Pre-School and Elementary School	350	71.2	61.7	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Winnetka Ave.	380	56.0	61.0	No
Residences to the south of Roscoe Blvd. on Cantara St., west of Winnetka Ave.	390	56.0	60.8	No
Winnetka Recreation Center	440	56.0	59.7	No
/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities. **SOURCE**: TAHA, 2021.				

TABLE 9: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – TAMPA AVENUE				
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
FIRST BUILDING ROW RECEPTORS				
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	71.3	83.1	Yes
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	71.3	76.2	Yes
Residences to the south of Roscoe Blvd.	160	71.3	73.0	No
SECOND BUILDING ROW RECEPTORS				
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	160	71.3	68.5	No
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	170	54.2	67.9	No
Residences to the north of Roscoe Blvd.	200	54.2	66.5	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	230	54.2	65.3	No
Residences to the north of Roscoe Blvd. on Tampa Ave.	370	71.3	61.2	No
THIRD BUILDING ROW RECEPTORS				
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	340	54.2	60.4	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	470	54.2	57.6	No
/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities. **SOURCE**: TAHA, 2021.				

TABLE 10: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – ALISO CANYON WASH CROSSING

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Joaquin Miller High School Career and Transition Center	50	73.9	83.1	Yes
Residences along Roscoe Blvd.	50	73.9	83.1	Yes
Residences along Roscoe Blvd. to the east and west	120	73.9	75.5	Yes
Residences along Roscoe Blvd. to the east and west	200	73.9	71.0	No
Valley International Preparatory High School	300	73.9	67.5	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Roscoe Blvd. on Cantara St. and Wilbur Ave.	200	54.1	66.5	No
Residences to the north of Roscoe Blvd.	230	57.9	65.3	No
Residences to the south of Roscoe Blvd. on Cantara St. and Vanalden Ave.	240	57.9	64.9	No
Residences to the south of Roscoe Blvd. on Crebs Ave.	250	54.1	64.6	No
Cleveland High School	330	57.9	62.2	No
THIRD BUILDING ROW RECEPTORS				
Residences to the north of Roscoe Blvd.	340	57.9	60.4	No
Residences to the south of Roscoe Blvd.	490	57.9	57.2	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

TABLE 11: TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS MICROTUNNELING CONSTRUCTION – RESDEDA AVENUE TO LINDLEY AVENUE

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Residences along Roscoe Blvd.	50	72.4	83.1	Yes
Lifehouse Church	50	72.4	83.1	Yes
Magnolia Science Academy 7	50	72.4	83.1	Yes
Dignity Health - Northridge Hospital Medical Center	50	72.4	83.1	Yes
Family Medicine Associates	50	72.4	83.1	Yes
Northridge Medical Center	50	72.4	83.1	Yes
Adamian Orthodontics	50	72.4	83.1	Yes
Facey Medical Group	100	72.4	77.1	Yes
Endeavor Surgical Center	280	72.4	68.1	No
Medical Park Plaza	320	72.4	67.0	No
Dignity Health Medical Group - Northridge Family Medicine	500	72.4	63.1	No
SECOND BUILDING ROW RECEPTORS				
Residences to the north and south of Roscoe Blvd.	160	50.6	68.5	No
Endeavor Surgical Center	420	72.4	60.1	No
THIRD BUILDING ROW RECEPTORS				
Residences to the north and south of Roscoe Blvd.	370	50.6	59.7	No
Northridge Middle School	370	50.6	59.7	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021

TABLE 12: MICROTUNNELING CONSTRUCTION NOISE LEVELS AT RECEPTORS – WHITE OAK AVENUE

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Northridge Kidney Center	50	73.7	83.1	Yes
Petite School House	50	73.7	83.1	Yes
Residences along Roscoe Blvd.	50	73.7	83.1	Yes
Residences along Roscoe Blvd.	100	73.7	77.1	Yes
Residences along Roscoe Blvd.	130	73.7	74.8	No
SECOND BUILDING ROW RECEPTORS				
Residences to the south of Roscoe Blvd. on Jellico Ave.	170	55.6	68.0	No
Residences along Roscoe Blvd.	200	73.7	66.6	No
Residences to the north of Roscoe Blvd. on White Oak Ave.	200	58.8	66.6	No
Residences to the southeast and southwest on Burton St.	200	55.7	66.6	No
Residences to the south of Roscoe Blvd. on White Oak Ave.	300	58.8	63.0	No
Residences to the south of Roscoe Blvd. on Yarmouth Ave.	340	55.7	61.9	No
Residences to the north of Roscoe Blvd. on Community St.	350	58.8	61.7	No
THIRD BUILDING ROW RECEPTORS				
Residences to the south of Roscoe Blvd. on Jellico Ave.	350	55.6	60.2	No
Residences to the southeast and southwest	350	55.7	60.2	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

Pressure Regulation Station Construction Noise

Construction at the two pressure regulating stations at Roscoe Boulevard west of Reseda (Roscoe & Reseda Regulating Station) and Penfield Avenue north of Roscoe Boulevard (Roscoe & Penfield Regulating Station) would primarily involve activities related to excavation. Pressure regulating station construction would typically be represented by the simultaneous operation of a crane, excavator, front end loader, and generator which would generate a combined noise level of approximately 81.9 dBA L_{eq}. The construction of the pressure regulating stations would generate noise levels of approximately 81.9 dBA L_{eq}. **Tables 13** and **14** present the estimated noise levels at the sensitive receptors nearest to each pressure regulation station sites. Noise levels would exceed 75 dBA at first row sensitive receptors and the threshold would typically not be exceeded at distances of 150 feet or greater. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site construction noise.

TABLE 13: PRESSURE REGULATING STATION CONSTRUCTION NOISE LEVELS AT RECEPTORS – PENFIELD AVENUE

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Residences along Roscoe Blvd. to the east	30	71.2	86.3	Yes
Residences along Roscoe Blvd. to the south	110	71.2	75.1	Yes
Residences along Roscoe Blvd. to the north	200	71.2	69.9	No
SECOND BUILDING ROW RECEPTORS				
Residences to the north of Roscoe Blvd.	350	60.6	60.5	No
Residences to the south of Roscoe Blvd.	430	60.6	58.7	No
Winnetka Avenue Elementary School	530	71.2	56.9	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

TABLE 14: PRESSURE REGULATING STATION CONSTRUCTION NOISE LEVELS AT RECEPTORS – RESEDA AVENUE

Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
FIRST BUILDING ROW RECEPTORS				
Medical Park Plaza	130	72.4	73.6	No
Residences to the west	310	72.4	66.1	No
Facey Medical Group	330	72.4	65.5	No
SECOND BUILDING ROW RECEPTORS				
Residences to the north of Roscoe Blvd.	300	54.1	61.8	No
Endeavor Surgical Center	330	72.4	61.0	No
Residences to the south of Roscoe Blvd.	370	54.1	60.0	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
SOURCE: TAHA, 2021.

Off-Site Truck Trips

In addition to on-site construction activities, noise would be generated off-site by construction-related trucks. Construction of the proposed project would require the hauling and export of debris and excavated material from the site and deliver construction materials, such as pipe segments and backfill. The maximum number of truck trips would occur during the microtunneling shaft backfill phase when 25 truck trips per day may be needed to backfill the shafts with the soil-cement slurry. Over an eight-hour workday the maximum hourly haul truck volume would approximately be three truck trips per hour. A doubling of traffic volumes is typically needed to audibly increase noise levels along a roadway segment. **Table 15** shows traffic volumes recorded by the City of Los Angeles Department of Transportation along Roscoe Boulevard which would be utilized as the haul route for trucks travelling to and from the project site. Daily traffic along Roscoe Boulevard is approximately 30,000 trips with over approximately 2,000 peak hour trips in the AM and PM peak hour. An additional three truck trips per hour would not double the existing volume along Roscoe Boulevard at any roadway segment. Off-site vehicle activity would not audibly change average daily noise levels due to the low volume of truck trips per day. Therefore, the proposed project would result in a less-than-significant impact related to construction truck noise.

TABLE 15: EXISTING TRAFFIC VOLUMES			
Roadway	Daily Traffic	Peak Hour Traffic	
		AM	PM
Roscoe Blvd. at Winnetka Ave.	29,549	2,089	2,463
Roscoe Blvd. at Tampa Ave.	32,733	2,639	2,642
Roscoe Blvd. at Reseda Blvd.	32,042	2,026	2,673
Roscoe Blvd. at White Oak Ave.	36,152	2,751	2,857
SOURCE: LADOT, *24 Hours Traffic Volume*.			

Mitigation Measures

N1 Construction equipment shall be properly maintained and equipped with mufflers to manufacturer specifications.

N2 Rubber-tired equipment shall be used rather than tracked equipment when feasible.

N3 Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.

N4 A public liaison shall be appointed for project construction will be responsible for addressing public concerns about construction activities, including excessive noise. As needed, the liaison shall determine the cause of the concern (e.g., starting too early, bad muffler) and implement measures to address the concern.

N5 The public shall be notified in advance of the location and dates of construction hours and activities.

N6 Barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around perimeter of the microtunneling shafts and the slurry separation plants for the microtunneling segments at Winnetka Avenue, Tampa Avenue, Aliso Canyon Wash Crossing, Reseda Boulevard to Lindley Avenue, and White Oak Avenue. Noise barriers shall be capable of reducing construction noise levels by at least 10 decibels. Feasibility includes, but is not limited to, ensuring that the enclosures do not create safety hazards associated with vehicle sight lines or pedestrian activities.

N7 Barriers, such as, but not limited to, plywood structures or flexible sound control curtains extending eight feet in height shall be erected around northern and eastern perimeter of the pressure regulating construction site at Roscoe Boulevard and Penfield Avenue. Noise barriers shall be capable of reducing construction noise levels by at least 10 decibels.

Significance After Mitigation

Construction. Mitigation Measures **N1** through **N7** are designed to reduce construction noise levels. The equipment mufflers associated with Mitigation Measure **N1** would reduce construction noise levels by approximately 5 dBA. Mitigation Measures **N2** through **N5**, although difficult to quantify, would also reduce and/or control construction noise levels. Mitigation Measures **N6** and **N7**, noise barriers, when utilized, typically reduce noise by 10 dBA. Potential noise reductions from temporary noise barriers may change due to potential changes in the construction process or possible physical limitation unknown at this time. Mitigated noise levels for previously identified sensitive receptors that would experience construction noise above thresholds are shown in **Table 16**. Mitigation Measures **N1** through **N7** would reduce noise levels to less than 75 dBA at nearby sensitive receptors. Consistent with the LAMC, all feasible measures would be taken to control construction noise. Therefore, the proposed project would result in a less-than-significant impact related to construction noise with mitigation incorporated.

TABLE 16: MITIGATED CONSTRUCTION NOISE LEVELS AT IMPACTED RECEPTORS					
Sensitive Receptor	Distance (feet)	Existing Noise Level (dBA) /a/	Mitigation Measure /b/	Mitigated Project Noise Level (dBA)	Exceed Threshold (75 dBA, L_{eq})
OPEN TRENCH - ROSCOE BLVD.					
Northridge Hospital	60	72.4	N1	73.3	No
Valley Hindu Temple	60	73.9	N1	72.0	No
Paradise Lodge	70	71.2	N1	71.4	No
Residences between Mason Avenue and Winnetka Ave	75	71.0	N1	71.4	No
Residences between Winnetka Ave. and Corbin Ave	75	71.2	N1	71.4	No
Residences between Corbin Ave. and Tampa Ave.	75	71.3	N1	71.4	No
Residences between Tampa Ave. and Reseda Blvd.	75	73.9	N1	71.4	No
Residences between Reseda Blvd. and White Oak Ave.	75	72.4	N1	71.4	No
Residences between White Oak Ave. and Celia Pl.	75	73.7	N1	73.3	No
Miller Career and Transition Center	75	73.9	N1	71.4	No
Lifehouse Church	90	72.4	N1	71.4	No
Residences between White Oak Ave. and Louise Ave. Southern Side	100	73.7	N1	71.4	No
OPEN TRENCH - LOUISE AVE.					
Residences adjacent to the east and west of Louise Ave.	60	58.8	N1	73.3	No
Cedars Assisted Living	70	73.7	N1	72.0	No
MICROTUNNELING - ROSCOE BLVD. AND WINNETKA AVE.					
Paradise Lodge	50	71.2	N1, N6	68.1	No
Residences along Roscoe Blvd. to the west	60	71.2	N1, N6	66.5	No
MICROTUNNELING - ROSCOE BLVD. AND TAMPA AVE.					
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	71.3	N1, N6	68.1	No
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	71.3	N1, N6	61.3	No
MICROTUNNELING - ALISO CANYON WASH CROSSING					
Joaquin Miller High School Career and Transition Center	50	73.9	N1, N6	68.1	No
Residences along Roscoe Blvd.	50	73.9	N1, N6	68.1	No
Residences along Roscoe Blvd. to the east and west	120	73.9	N1, N6	60.5	No
MICROTUNNELING - RESEDA AVE. TO LINDLEY AVE.					
Residences along Roscoe Blvd.	50	72.4	N1, N6	68.1	No
Lifehouse Church	50	72.4	N1, N6	68.1	No
Magnolia Science Academy 7	50	72.4	N1, N6	68.1	No
Dignity Health - Northridge Hospital Medical Center	50	72.4	N1, N6	68.1	No
Family Medicine Associates	50	72.4	N1, N6	68.1	No
Northridge Medical Center	50	72.4	N1, N6	68.1	No
Adamian Orthodontics	50	72.4	N1, N6	68.1	No
Residences along Roscoe Blvd.	90	72.4	N1, N6	63.0	No
Facey Medical Group	100	72.4	N1, N6	62.1	No
Dignity Health Medical Group - Northridge Family Medicine	500	72.4	N1, N6	48.1	No

TABLE 16: MITIGATED CONSTRUCTION NOISE LEVELS AT IMPACTED RECEPTORS					
Sensitive Receptor	**Distance (feet)**	**Existing Noise Level (dBA) /a/**	**Mitigation Measure /b/**	**Mitigated Project Noise Level (dBA)**	**Exceed Threshold (75 dBA, L_{eq})**
MICROTUNNELING - ROSCOE BLVD. AND WHITE OAK AVE.					
Northridge Kidney Center	50	73.7	N1, N6	68.1	No
Petite School House	50	73.7	N1, N6	68.1	No
Residences along Roscoe Blvd.	50	73.7	N1, N6	68.1	No
Residences along Roscoe Blvd.	100	73.7	N1, N6	62.1	No
PRESSURE REGULATION STATION - ROSCOE BLVD. AND PENFIELD AVE.					
Residences along Roscoe Blvd. to the east	30	71.2	N1, N7	71.3	No
Residences along Roscoe Blvd. to the south	110	71.2	N1, N7	60.1	No

/a/ The average hourly noise level for weekday daytime (7:00 a.m. to 9:00 p.m.) activities.
/b/ Mitigation Measure **N1** Includes a 5 dB reduction for equipment mufflers, Mitigation Measures **N6** and **N7** includes a 10 dB reduction for a temporary noise barrier.
SOURCE: TAHA, 2021.

b) *Would the proposed project result in generation of excessive ground-borne vibration or ground-borne noise levels? (Less-than-Significant Impact)*

Construction. Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

Based on visual characteristics of adjacent structures (e.g., age), residential building foundations are assumed to be constructed of non-engineered timber and masonry, and the larger structures, such as hospitals are assumed to be constructed of reinforced-concrete, steel, or timber. According to the FTA guidance, buildings constructed of non-engineered timber and masonry can withstand vibration levels up to 0.2 inches per second without experiencing damage. Buildings constructed of reinforced-concrete, steel, or timber can withstand vibration levels up to 0.5 inches per second without experiencing damage. Equipment that would be utilized would be most similar to an excavator, a vibratory pile driver, a small bulldozer, and a caisson drill. Vibration levels for various types of construction equipment with an average source level reported in terms of velocity are shown in **Table 17**. Construction equipment would largely be stationary on the project site and would not regularly traverse the site resulting in the generation of vibration at off-site uses. Structures adjacent to the open-trench or microtunneling sites would typically be at least 50 feet from the construction activity. At a distance of 50 feet, vibration generating equipment would generate vibration levels below the vibration damage threshold of 0.2 inches per second for non-engineered timber and masonry buildings and 0.5 reinforced-concrete, steel, or timber buildings, respectively.

TABLE 17: TYPICAL OUTDOOR CONSTRUCTION EQUIPMENT VIBRATION LEVELS				
Equipment	**PPV at 25 Feet (Inches/Second)**	**PPV at 50 Feet (Inches/Second)**	**VdB at 25 Feet (micro-inches/Second)**	**VdBat 50 Feet (micro-inches/Second)**
Caisson Drill	0.089	0.031	87	78
Excavator	0.040	0.014	80	71
Pile Driver (Sonic)	0.170	0.060	93	84
Small Bulldozer	0.003	0.001	58	49
SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, September 2018; New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012.				

Four historic use structures have been identified within 500 feet of construction activity. Historic uses can experience vibration level of 0.12 inches per second before there is risk of damage to the structure. As shown in **Table 18** and **Figure 4**, the nearest historic structure is Cleveland High School, which is located approximately 50 feet from where construction activity would occur along Roscoe Boulevard. Vibration at this distance would be approximately 0.061 inches per second from a vibratory pile driver, which would be less than the vibration damage threshold of 0.12 inches per second. Lifehouse Church, "El Encanto" Historic Residential Structure, Los Angeles Fire Department Station 104, would be more than 50 feet away, and would not receive vibration levels that would exceed the vibration damage threshold of 0.12 inches per second. In addition to on-site construction activities, construction trucks on the roadway network have the potential to generate vibration. However, rubber-tired vehicles, including trucks, rarely generate perceptible vibration.[5] It is not anticipated that project-related trucks would generate perceptible vibration adjacent to the roadway network. Therefore, the proposed project would result in a less-than-significant impact related to structure damage from construction vibration.

TABLE 18: HISTORIC USE VIBRATION ANALYSIS				
Historic Uses/Address	**Distance from Construction Activity (feet)**	**Reference Vibration Level (Inches/Second)**	**PPV at Historic Use (Inches/Second)**	**Exceed 0.12 Inches/Second Threshold**
Cleveland High School 8140 Vanalden Ave.	50	0.170	0.061	No
Lifehouse Church 18355 Roscoe Blvd.	95	0.089	0.012	No
"El Encanto" Historic Residential Structure 17360 Chase St.	410	0.089	Less than 0.01	No
Los Angeles Fire Department Station 104 8349 Winnetka Ave.	475	0.170	Less than 0.01	No
Northridge Middle School 17690 Chase St.	630	0.170	Less than 0.01	No
SOURCE: New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012. Los Angeles Department of City Planning Office of Historic Resources, *HistoricPlacesLA*, accessed June 24, 2021.				

Vibration annoyance is another concern related to construction activity. However, perceptible vibration is not typically a concern for human health and is a common occurrence within the urban environment. Special uses such as select medical facilities, research facilities and recording studios would be potentially impacted by construction vibration annoyance due to the presences of sensitive equipment. Vibration levels that would be generated by construction equipment were calculated for special uses identified within the vicinity of the proposed project which include Dignity Health –Northridge Hospital Medical Center and Lima Recording

[5] FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.

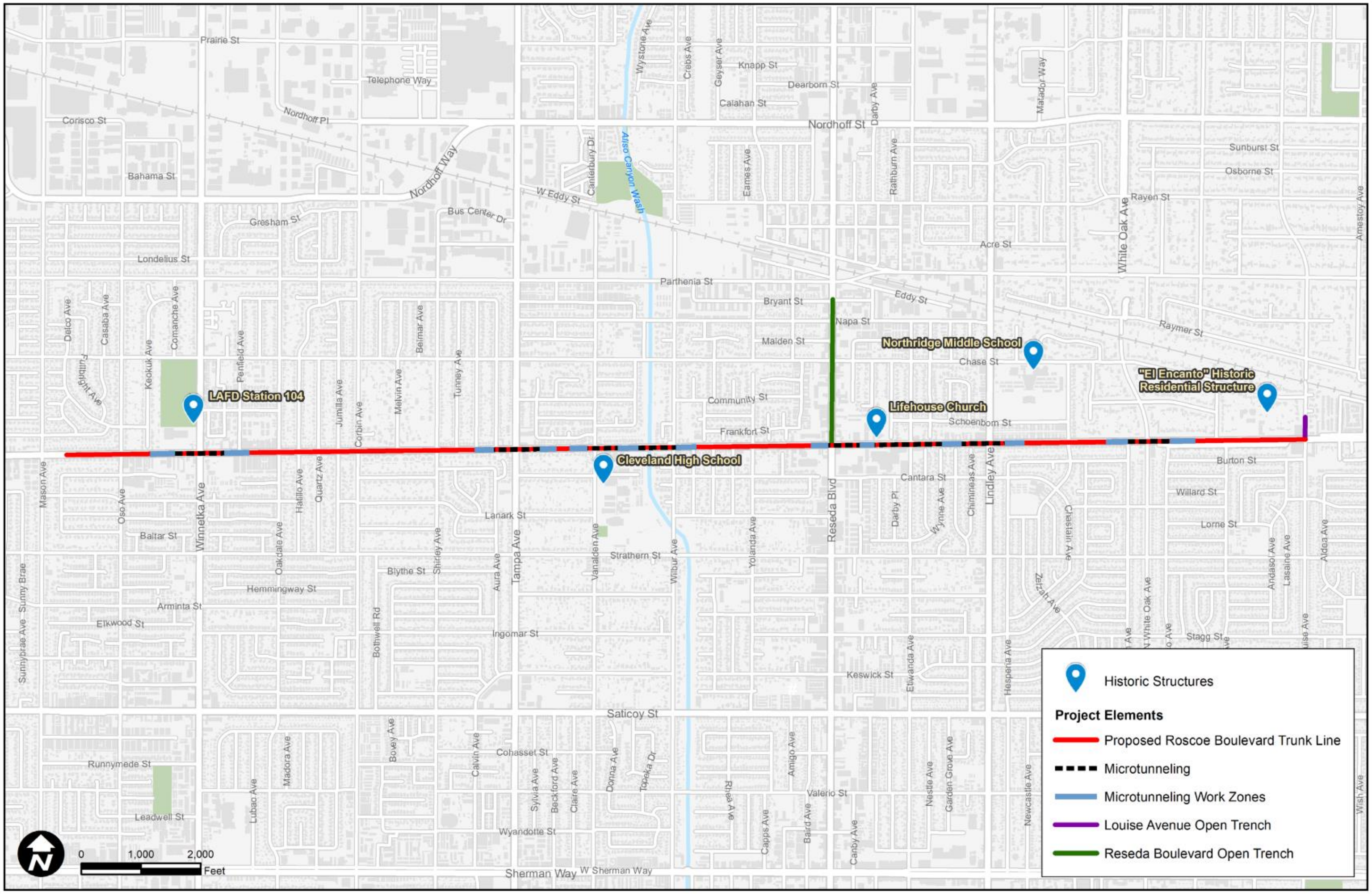
Studios. According to the FTA Transit Noise and Vibration Impact Guidance, buildings constructed of large masonry on spread footings, such as the Dignity Health – Northridge Hospital Medical Center, reduce ground-borne vibration by approximately 13 dB due to the building foundations.[6] **Table 19** shows that vibration levels would exceed the annoyance criteria at Dignity Health – Northridge Hospital Medical Center. This vibration level would result primarily form the use of vibratory drivers to install sheet piles. In addition to on-site construction activities, construction trucks on the roadway network have the potential to expose vibration-sensitive land uses. Rubber-tired vehicles, including trucks, rarely generate perceptible vibration.[7] It is not anticipated that project-related trucks would generate perceptible vibration adjacent to the roadway network. Therefore, without mitigation, the proposed project would result in a significant impact related to on-site vibration annoyance.

TABLE 19: CONSTRUCTION VIBRATION LEVELS AT SENSITIVE RECEPTORS (ANNOYANCE)

Sensitive Receptor	Distance (feet) /a/	Coupling to Building Foundation Adjustment /b/	Vibration Level at Structure after Adjustment (VdB)	Threshold (VdB)	Exceed Threshold?
Dignity Health - Northridge Hospital Medical Center	50	-13 dB	71	65	Yes
Lima Recording Studios	420	-	43	65	No

/a/ Measured from the project site to the nearest structure.
/b/ Adjustment for building coupling loss.
SOURCE: TAHA, 2021.

[6]FTA, *Transit Noise and Vibration Impact Assessment, Table 6-12 Path Adjustment Factors for Generalized Predictions of Groundborne Vibration and Noise*, September 2018.
[7]FTA, *Transit Noise and Vibration Impact Assessment*, September 2018.



Source: TAHA, 2021.

FIGURE 4

HISTORIC USES

Mitigation Measures

N8 Press in pile drivers shall be used in place of vibratory pile drivers to install sheet piles for the microtunneling shaft between Reseda Boulevard and Etiwanda Avenue, adjacent to Dignity Health – Northridge Medical Center.

Significance After Mitigation

Construction. Mitigation Measure **N8** would eliminate off-site vibration annoyance impacts at Dignity Healthy – Northridge Hospital Medical Center. Mitigation Measure **N8** would require the use of press in pile drivers, in place of vibratory pile drivers. Press in pile drivers generate vibration levels of approximately 0.03 1 inches per second at 25 feet, which is less than vibration produced by an excavator.[8] An excavator generates of a vibration level equivalent to approximately 0.04 inches per second (80 VdB). A press in pile driver would generate a similar VdB vibration level of 80 VdB and would result in a vibration level of approximately 58 VdB at the Dignity Health – Northridge Hospital Medical Center when accounting for the building foundation coupling loss of 13 dB. This would be below the 65 VdB vibration annoyance threshold. Therefore, the proposed project would result in a less-than-significant impact related to construction vibration with mitigation incorporated.

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 proposed project expose people residing or working in the project area to excessive noise levels? (No Impact)

The proposed project is located within two miles of Van Nuys Airport to the east. According to the Los Angeles County Airport Land Use Commission, the proposed project area is not within the Airport Influence Area.[9] Therefore, no impact related to airport or airstrip noise would occur.

[8]David White, Tom Finlay, Malcolm Bolton, Grant Bearss, Cambridge University Engineering Department, *Press-in piling: Ground vibration and noise during pile installation*.

[9]Los Angeles County Airport Land Use Commission, May 2003.

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Los Angeles Department of Transportation (LADOT), *24 Hours Traffic Volume – Roscoe BNL E/O Reseda Blvd.*, September 26, 2012.

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Los Angeles Municipal Code, *Section 112.04 (Powered Equipment Intended for Repetitive Use in Residential Areas and Other Machinery, Equipment, and Devices)*, December 31, 2019.

Los Angeles Municipal Code, *Section 112.05 (Maximum Noise Level of Powered Equipment or Hand Powered Tools)*, December 31, 2019.

Los Angeles Municipal Code, *Section 116.01 (Loud, Unnecessary, and Unusual Noises)*, December 31, 2019.

Los Angeles Municipal Code, *Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited)*, December 31, 2019.

New Hampshire Department of Transportation, *Ground Vibrations Emanating from Construction Equipment*, September 8, 2012.

Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during Vibratory Pile Installation - Technical Memorandum*, June 2010.

Appendix

Noise and Vibration Calculations

Noise Formulas

Noise Distance Attenuation

Hard Site

Ni = No - 20 * LOG(Di/Do)

Ni = attenuated noise level of interest
No = reference noise level

Di = distance to receptor (Di>Do)
Do = reference distance

Source: (Bolt, Beranek, and Newman, 1971)

Summation of Noise Levels

Equation: Ns=10 x LOG10((10^(N1/10))+(10^(N2/10))+(10^(N3/10))+(10^(N4/10)))

Ns = Noise Level Sum
N1 = Noise Level 1
N2 = Noise Level 2
N3 = Noise Level 3
N4 = Noise Level 4

Efficient Summation Formula
=10*LOG(SUM(10^(UserRange/10)))

Source: California Department of Transportation, Technical Noise Supplement, 2013

Construction Noise Analysis

Phased Construction Noise Levels	
Construction Equipment	**Noise Level at 50 feet (dBA)**
Open-Trench Site Preparation	
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Open-Trench Site Preparation Combined	**79.0**
Open-Trench Excavation and Shoring	
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Open-Trench Excavation and Shoring Combined	**79.9**
Open-Trench Pipe Installation	
Crane	72.6
Generator	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Open-Trench Pipe Installation Combined	**78.8**
Open-Trench Roadway Restoration	
Forklift	63.2
Paver	74.2
Roller Compactor	73.0
Open-Trench Roadway Restoration Combined	**76.7**

Trunk Line Microtunneling Site Preparation	
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Concrete Saw	82.6
Crane	72.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Trunk Line Microtunneling Site Preparation Combined	**79.0**
Trunk Line Microtunneling Shaft Excavation	
Crane	72.6
Vibratory or Press in Driver	78.9
Excavator	76.7
Front End Loader	75.1
Trunk Line Microtunneling Shaft Excavation Combined	**79.8**
Trunk Line Microtunneling Tunneling/Jacking	
Generator	77.6
Hydraulic Pump in Pipe Jacking Plant	66.3
Slurry Separator Plant	78.0
Ventilation Fan	78.9
Crane	72.6
Micro Bore Tunneling Machine (MBTM)	0.0
Trunk Line Microtunneling Combined	**83.1**
Trunk Line Microtunneling Shaft Backfilling	
Concrete Mixer Truck	74.8
Crane	72.6
Trunk Line Microtunneling Combined	**76.8**
Trunk Line Microtunneling Roadway Restoration	
Forklift	63.2
Paver	74.2
Roller Compactor	73.0
Micro-Tunneling Roadway Restoration Combined	**76.7**

Distribution Mainline Open-Trench Site Preparation	
Excavator	76.7
Front End Loader	75.1
Concrete Saw	82.6
Forklift	63.2
Haul Truck	72.5
Vacuum Excavator (Vac-truck)	81.3
Distribution Mainline Open-Trench Site Preparation Combined	**79.0**
Distribution Mainline Open-Trench Site Excavation and Shoring	
Excavator	76.7
Front End Loader	75.1
Auger Drill Rig	77.4
Distribution Mainline Open-Trench Site Excavation and Shoring Combined	**79.0**
Distribution Mainline Open-Trench Installation	
Crane	72.6
Generator	77.6
Concrete Mixer Truck	74.8
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Distribution Mainline Open-Trench Installation Combined	**78.8**

Distribution Mainline Roadway Restoration	
Forklift	63.2
Paver	74.2
Roller Compactor	73.0
Distribution Mainline Roadway Restoration Combined	**76.7**

Pressure Regulation Stations Construction	
Crane	72.6
Excavator	76.7
Front End Loader	75.1
Generator	77.6
Concrete Pump Trucks	74.4
Haul Truck	72.5
Vacuum Street Sweeper	71.6
Welder / Torch	70.0
Pressure Regulation Stations Construction Combined	**81.9**

Source: AECOM, *Construction Noise and Vibration - North Harbour 2 Watermain and Northern Interceptor Shared Corridor* , 29 April 2016.
Source: Federal Highway Administration, *Roadway Construction Noise Model* , 2008
Source: *Noise Levels of Lift Trucks* , 25 May 2001, rigolett.home.xs4all.nl/ENGELS/equipment/liftfr.htm.
Source: Washington State Department of Transportation, *Airborne Noise Measurements (A-weighted and un-weighted) during VibratoryPile Installation - Technical Memorandum* , 21 June 2010.

EXISTING AMBIENT NOISE LEVELS	
(Site Number) Noise Monitoring Locations	Sound Level (dBA, Leq)
(1) Residences (20363 Roscoe Blvd.)	71.0
(2) Residences (Keokuk Ave. and Community St.)	56.0
(3) Roscoe Blvd. and Winnetka Ave.	71.2
(4) Residences (8239 Quartz Ave.)	60.6
(5) Residences (8343 Tunney Ave.)	54.2
(6) Roscoe Blvd. and Tampa Ave.	71.3
(7) Residences (Vanalden Ave. and Cantara St.)	57.9
(8) Roscoe Blvd. at Miller Career and Transition Center	73.9
(9) Residences (8217 Geyser Ave.)	54.1
(10) Roscoe Blvd. at Northridge Hospital Medical Center	72.4
(11) Residences (8217 Garden Grove Ave.)	50.6
(12) Residences (Burton St. and Jamieson Ave.)	55.7
(13) Residences (8336 White Oak Ave.)	58.8
(14) Residences (17501 Burton St.)	55.6
(15) Roscoe Blvd. at St. Mary and St. Athanasius Coptic Orthodox Church	73.7

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (OPEN TRENCH ROSCOE BOULEVARD)							
Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Northridge Hospital	60	0	79.9	72.4	78.3	75	Yes
Valley Hindu Temple	60	0	79.9	73.9	78.3	75	Yes
Paradise Lodge	70	0	79.9	71.2	77.0	75	Yes
Residences between Mason Avenue and Winnetka Ave	75	0	79.9	71.0	76.4	75	Yes
Residences between Winnetka Ave. and Corbin Ave	75	0	79.9	71.2	76.4	75	Yes
Residences between Corbin Ave. and Tampa Ave.	75	0	79.9	71.3	76.4	75	Yes
Residences between Tampa Ave. and Reseda Blvd.	75	0	79.9	73.9	76.4	75	Yes
Residences between Reseda Blvd. and White Oak Ave.	75	0	79.9	72.4	76.4	75	Yes
Residences between White Oak Ave. and Celia Pl.	75	0	79.9	73.7	76.4	75	Yes
Miller Career and Tranisition Center	75	0	79.9	73.9	76.4	75	Yes
Lifehouse Church	90	0	79.9	72.4	74.8	75	No
Residences between White Oak Ave. and Louise Ave. Southern Side	100	0	79.9	73.7	73.9	75	No
Petite Schoolhouse	125	0	79.9	58.8	71.9	75	No
Valley International Prepatory High School	130	0	79.9	73.9	71.6	75	No
Spirt of Hope Church	150	0	79.9	73.7	70.4	75	No
Residence between Winnetka Ave. Elementary School	200	0	79.9	71.2	67.9	75	No
St. Mary and St. Anthanasius Coptic Orthodox Church	270	0	79.9	73.7	65.3	75	No
Second Row Receptors							
Residences between Mason Avenue and Winnetka Ave	200	4.5	79.9	56.0	63.4	75	No
Residences between Winnetka Ave. and Corbin Ave	200	4.5	79.9	60.6	63.4	75	No
Residences between Corbin Ave. and Tampa Ave.	200	4.5	79.9	54.2	63.4	75	No
Residences between Tampa Ave. and Aliso Canyon Wash	200	4.5	79.9	57.9	63.4	75	No
Residences between Aliso Canyon Wash and Reseda Blvd.	200	4.5	79.9	54.1	63.4	75	No
Residences between Reseda Blvd. and Lindley Ave.	200	4.5	79.9	50.6	63.4	75	No
Residences between Lindley Ave and White Oak Ave.	200	4.5	79.9	55.7	63.4	75	No
Residences between White Oak Ave. and Celia Pl.	200	4.5	79.9	55.6	63.4	75	No
Residences between White Oak Ave. and Louise Ave. Southern Side	225	4.5	79.9	55.6	62.3	75	No
Green Gables Pre-School and Elementary School	350	4.5	79.9	71.2	58.5	75	No
Cleveland High School	350	4.5	79.9	57.9	58.5	75	No
Magnolia Science Academy 7	400	4.5	79.9	72.4	57.3	75	No
St. Mary School	400	4.5	79.9	55.6	57.3	75	No
Winnetka Recreation Center	450	4.5	79.9	56.0	56.3	75	No
Faith Bible Church Northrdige	520	4.5	79.9	55.6	55.1	75	No
Third Row Receptors							
Residences between Mason Avenue and Winnetka Ave	400	6	79.9	56.0	55.8	75	No
Residences between Winnetka Ave. and Corbin Ave	400	6	79.9	60.6	55.8	75	No
Residences between Corbin Ave. and Tampa Ave.	400	6	79.9	54.2	55.8	75	No
Residences between Tampa Ave. and Aliso Canyon Wash	400	6	79.9	57.9	55.8	75	No
Residences between Aliso Canyon Wash and Reseda Blvd.	400	6	79.9	54.1	55.8	75	No
Residences between Reseda Blvd. and Lindley Ave.	400	6	79.9	50.6	55.8	75	No
Residences between Lindley Ave and White Oak Ave.	400	6	79.9	55.7	55.8	75	No
Residences between White Oak Ave. and Celia Pl.	400	6	79.9	55.6	55.8	75	No
Residences between White Oak Ave. and Celia Pl.	425	6	79.9	55.6	55.3	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (OPEN TRENCH RESEDA BOULEVARD)							
Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Max Construction Noise (dBA, Leq)	Existing Ambient (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Residences east of Reseda Blvd. approximately 480 feet north of Roscoe Blvd.	150	0	79.9	70.4	72.4	75	No
Second Row Receptors							
Magnolia Science Academy 7	270	4.5	79.9	60.8	56.0	75	No
Residences to the east and west of Reseda Boulevard	350	4.5	79.9	58.5	56.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (OPEN TRENCH LOUISE AVENUE)							
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Max Construction Noise (dBA, Leq)**	**Existing Ambient (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors							
Residences adjacent to the east and west of Louise Ave.	60	0	79.9	78.3	58.8	75	Yes
Cedars Assisted Living	70	0	79.9	77.0	73.7	75	Yes
Residences to the southeast and southwest	330	0	79.9	63.5	73.7	75	No
Residences to the north	370	0	79.9	62.5	58.8	75	No
Residences to the south	400	0	79.9	61.8	58.8	75	No
Second Row Receptors							
Residences	200	4.5	79.9	63.4	56.0	75	No
Faith Bible Church Northridge	500	4.5	79.9	55.4	58.8	75	No
Third Row Receptors							
Residences	300	6	79.9	58.3	56.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - ROSCOE BLVD. AND WINNETKA AVE.)							
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Max Construction Noise (dBA, Leq)**	**Existing Ambient (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors							
Paradise Lodge	50	0	83.1	83.1	71.2	75	Yes
Residences along Roscoe Blvd. to the west	60	0	83.1	81.5	71.2	75	Yes
Residences along Roscoe Blvd. to the east	150	0	83.1	73.6	71.2	75	No
Winnetka Avenue Elementary School	190	0	83.1	71.5	71.2	75	No
Residences to the west	250	0	83.1	69.1	71.2	75	No
Second Row Receptors							
Residences along Roscoe Blvd. to the east	270	4.5	83.1	64.0	71.2	75	No
Residences to the north and northeast	270	4.5	83.1	64.0	56.0	75	No
Greene Gables Pre-School and Elementary School	350	4.5	83.1	61.7	71.2	75	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Winnetka Ave.	380	4.5	83.1	61.0	56.0	75	No
Residences to the south of Roscoe Blvd. on Cantara St., west of Winnetka Ave.	390	4.5	83.1	60.8	56.0	75	No
Winnetka Recreation Center	440	4.5	83.1	59.7	56.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - ROSCOE BLVD. AND TAMPA AVE.)							
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**Max Construction Noise (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors							
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	0	83.1	71.3	83.1	75	Yes
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	0	83.1	71.3	76.3	75	Yes
Residences to the south of Roscoe Blvd.	160	0	83.1	71.3	73.0	75	No
Second Row Receptors							
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	160	4.5	83.1	71.3	68.5	75	No
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	170	4.5	83.1	54.2	68.0	75	No
Residences to the north of Roscoe Blvd.	200	4.5	83.1	54.2	66.6	75	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	230	4.5	83.1	54.2	65.3	75	No
Residences to the north of Roscoe Blvd. on Tampa Ave.	370	4.5	83.1	71.3	61.2	75	No
Third Row Receptors							
Residences to the south of Roscoe Blvd. on Cantara St., west of Tampa Ave.	340	6	83.1	54.2	60.4	75	No
Residences to the south of Roscoe Blvd. on Cantara St., east of Tampa Ave.	470	6	83.1	54.2	57.6	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - ALISO CANYON WASH CROSSING)							
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**Max Construction Noise (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors							
Joaquin Miller High School Career and Transition Center	50	0	83.1	73.9	83.1	75	Yes
Residences along Roscoe Blvd.	50	0	83.1	73.9	83.1	75	Yes
Residences along Roscoe Blvd. to the east and west	120	0	83.1	73.9	75.5	75	Yes
Residences along Roscoe Blvd. to the east and west	200	0	83.1	73.9	71.1	75	No
Valley International Preparatory High School	300	0	83.1	73.9	67.5	75	No
Second Row Receptors							
Residences to the south of Roscoe Blvd. on Cantara St. and Wilbur Ave.	200	4.5	83.1	54.1	66.6	75	No
Residences to the north of Roscoe Blvd.	230	4.5	83.1	57.9	65.3	75	No
Residences to the south of Roscoe Blvd. on Cantara St. and Vanalden Ave.	240	4.5	83.1	57.9	65.0	75	No
Residences to the south of Roscoe Blvd. on Crebs Ave.	250	4.5	83.1	54.1	64.6	75	No
Cleveland High School	330	4.5	83.1	57.9	62.2	75	No
Third Row Receptors							
Residences to the north of Roscoe Blvd.	340	6	83.1	57.9	60.4	75	No
Residences to the south of Roscoe Blvd.	490	6	83.1	57.9	57.3	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - RESEDA AVE. TO Lindley Ave.)							
Sensitive Receptors	**Distance (feet)**	**Intervening Building /a/**	**Reference Noise Level (dBA)**	**Existing Ambient (dBA, Leq)**	**Max Construction Noise (dBA, Leq)**	**LA City Noise Threshold**	**Exceed Threshold?**
First Row Receptors							
Residences along Roscoe Blvd.	50	0	83.1	72.4	83.1	75	Yes
Lifehouse Church	50	0	83.1	72.4	83.1	75	Yes
Magnolia Science Academy 7	50	0	83.1	72.4	83.1	75	Yes
Dignity Health - Northridge Hospital Medical Center	50	0	83.1	72.4	83.1	75	Yes
Family Medicine Associates	50	0	83.1	72.4	83.1	75	Yes
Northridge Medical Center	50	0	83.1	72.4	83.1	75	Yes
Adamian Orthodontics	50	0	83.1	72.4	83.1	75	Yes
Facey Medical Group	100	0	83.1	72.4	77.1	75	Yes
Endeavor Surgical Center	280	0	83.1	72.4	68.1	75	No
Medical Park Plaza	320	0	83.1	72.4	67.0	75	No
Dignity Health Medical Group - Northridge Family Medicine	500	0	83.1	72.4	63.1	75	No
Second Row Receptors							
Residences to the north and south of Roscoe Blvd.	160	4.5	83.1	50.6	68.5	75	No
Endeavor Surgical Center	420	4.5	83.1	72.4	60.1	75	No
Third Row Receptors							
Residences to the north and south	370	6	83.1	50.6	59.7	75	No
Northridge Middle School Althetic Fields	370	6	83.1	50.6	59.7	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (MICROTUNNELING - ROSCOE BLVD. AND WHITE OAK AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Northridge Kidney Center	50	0	83.1	73.7	83.1	75	Yes
Petite School House	50	0	83.1	73.7	83.1	75	Yes
Residences along Roscoe Blvd.	50	0	83.1	73.7	83.1	75	Yes
Residences along Roscoe Blvd.	100	0	83.1	73.7	77.1	75	Yes
Residences along Roscoe Blvd.	130	0	83.1	73.7	74.8	75	No
Second Row Receptors							
Residences to the south of Roscoe Blvd. on Jellico Ave.	170	4.5	83.1	55.6	68.0	75	No
Residences along Roscoe Blvd.	200	4.5	83.1	73.7	66.6	75	No
Residences to the north of Roscoe Blvd. on White Oak Ave.	200	4.5	83.1	58.8	66.6	75	No
Residences to the southeast and southwest on Burton St.	200	4.5	83.1	55.7	66.6	75	No
Residences to the south of Roscoe Blvd. on White Oak Ave.	300	4.5	83.1	58.8	63.0	75	No
Residences to the south of Roscoe Blvd. on Yarmouth Ave.	340	4.5	83.1	55.7	61.9	75	No
Residences to the north of Roscoe Blvd. on Community St.	350	4.5	83.1	58.8	61.7	75	No
Third Row Receptors							
Residences to the south of Roscoe Blvd. on Jellico Ave.	350	6	83.1	55.6	60.2	75	No
Residences to the southeast and southwest	350	6	83.1	55.7	60.2	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (PRESSURE REGULATION STATION - ROSCOE BLVD. AND PENFIELD AVE.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Residences along Roscoe Blvd. to the east	30	0	81.9	71.2	86.3	75	Yes
Residences along Roscoe Blvd. South	110	0	81.9	71.2	75.1	75	Yes
Residences along Roscoe Blvd. to the north	200	0	81.9	71.2	69.9	75	No
Second Row Receptors							
Residences to the north of Roscoe Blvd.	350	4.5	81.9	60.6	60.5	75	No
Residences to the south of Roscoe Blvd.	430	4.5	81.9	60.6	58.7	75	No
Winnetka Avenue Elementary School	530	4.5	81.9	71.2	56.9	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

CONSTRUCTION NOISE LEVELS AT SENSITIVE RECEPTORS (PRESSURE REGULATION STATION - ROSCOE BLVD. AND RESEDA BLVD.)

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Existing Ambient (dBA, Leq)	Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
First Row Receptors							
Medical Park Plaza	130	0	81.9	72.4	73.6	75	No
Residences to the west	310	0	81.9	72.4	66.1	75	No
Facey Medical Group	330	0	81.9	72.4	65.5	75	No
Second Row Receptors							
Residences to the north of Roscoe Blvd.	300	4.5	81.9	54.1	61.8	75	No
Endeavor Surgical Center	330	4.5	81.9	72.4	61.0	75	No
Residences to the south of Roscoe Blvd.	370	4.5	81.9	54.1	60.0	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row

MITIGATED CONSTRUCTION NOISE

Sensitive Receptors	Distance (feet)	Intervening Building /a/	Reference Noise Level (dBA)	Mitigation Measure /b/	Mitigation /b/	Existing Ambient (dBA, Leq)	Mitigated Reference Noise Level	Mitigated Max Construction Noise (dBA, Leq)	LA City Noise Threshold	Exceed Threshold?
OPEN TRENCH - ROSCOE BOULEVARD										
Residences between Mason Avenue and Winnetka Ave	75	0	79.9	N1	5	71.0	74.9	71.4	75	No
Residences between Winnetka Ave. and Corbin Ave	75	0	79.9	N1	5	71.2	74.9	71.4	75	No
Residences between Corbin Ave. and Tampa Ave.	75	0	79.9	N1	5	71.3	74.9	71.4	75	No
Residences between Tampa Ave. and Reseda Blvd.	75	0	79.9	N1	5	73.9	74.9	71.4	75	No
Residences between Reseda Blvd. and White Oak Ave.	75	0	79.9	N1	5	72.4	74.9	71.4	75	No
Residences between White Oak Ave. and Celia Pl.	75	0	79.9	N1	5	73.7	74.9	71.4	75	No
Northridge Hospital	60	0	79.9	N1	5	72.4	74.9	73.3	75	No
Valley Hindu Temple	60	0	79.9	N1	5	73.9	74.9	73.3	75	No
Paradise Lodge	70	0	79.9	N1	5	71.2	74.9	72.0	75	No
Miller Career and Transition Center	75	0	79.9	N1	5	73.9	74.9	71.4	75	No
OPEN TRENCH - LOUISE AVENUE										
Residences adjacent to the east and west of Louise Ave.	60	0	79.9	N1	5	58.8	74.9	73.3	75	No
Cedars Assisted Living	70	0	79.9	N1	5	73.7	74.9	72.0	75	No
MICROTUNNELING - ROSCOE BLVD. AND WINNETKA AVE.										
Paradise Lodge	50	0	83.1	N1, N6	15	71.2	68.1	68.1	75	No
Residences along Roscoe Blvd. to the west	60	0	83.1	N1, N6	15	71.2	68.1	66.5	75	No
MICROTUNNELING - ROSCOE BLVD. AND TAMPA AVE.										
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	50	0	83.1	N1, N6	15	71.3	68.1	68.1	75	No
Residences along Roscoe Blvd. to the east and west of Tampa Ave.	110	0	83.1	N1, N6	15	71.3	68.1	61.3	75	No
MICROTUNNELING - ALISO CANYON WASH CROSSING										
Joaquin Miller High School Career and Transition Center	50	0	83.1	N1, N6	15	73.9	68.1	68.1	75	No
Residences along Roscoe Blvd.	50	0	83.1	N1, N6	15	73.9	68.1	68.1	75	No
Residences al;ong Roscoe Blvd. to the east and west	120	0	83.1	N1, N6	15	73.9	68.1	60.5	75	No
MICROTUNNELING - RESEDA Blvd. TO LINDLEY AVE.										
Residences along Roscoe Blvd.	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Lifehouse Church	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Magnolia Science Academy 7	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Dignity Health - Northridge Hospital Medical Center	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Family Medicine Associates	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Northridge Medical Center	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Facey Medical Group	100	0	83.1	N1, N6	15	72.4	68.1	62.1	75	No
Adamian Orthodontics	50	0	83.1	N1, N6	15	72.4	68.1	68.1	75	No
Residences along Roscoe Blvd.	90	0	83.1	N1, N6	15	72.4	68.1	63.0	75	No
Dignity Health Medical Group - Northridge Family Medicine	500	0	83.1	N1, N6	15	72.4	68.1	48.1	75	No
MICROTUNNELING - ROSCOE BLVD. AND WHITE OAK AVE.										
Northridge Kidney Center	50	0	83.1	N1, N6	15	73.7	68.1	68.1	75	No
Petite School House	50	0	83.1	N1, N6	15	73.7	68.1	68.1	75	No
Residences along Roscoe Blvd.	50	0	83.1	N1, N6	15	73.7	68.1	68.1	75	No
Residences along Roscoe Blvd.	100	0	83.1	N1, N6	15	73.7	68.1	62.1	75	No
PRESSURE REGULATION STATION - ROSCOE BLVD. AND PENFIELD AVE.										
Residences along Roscoe Blvd. to the east	30	0	81.9	N1, N7	15	71.2	66.9	71.3	75	No
Residences along Roscoe Blvd. to the south	110	0	81.9	N1, N7	15	71.2	66.9	60.1	75	No

/a/ -4.5 dB for on intervening row of buildings and -1.5 dB for each subsequent row
/b/ Mitigation Measure N1 includes a 5 dB reduction for equipment mufflers, Mitigation Measures N6 and N7 and Mitigation Measure N6 includes a 10 dB reduction for a temporary noise barrier.

Vibration Formulas

Vibration PPV Attenuation

Equation: PPVequip = PPVref x (25/D)^1.5
PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from Table 12-2
D is the distance from the equipment to the receiver.

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration VdB Attenuation

Equation: Lv(D) = Lv(25 ft) – 30log(D/25)
D = Distance (feet)
Lv(D) = Vibration Level

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, September 2018.

Vibration Damage and Annoyance Analysis

Construction Vibration Damage Criteria	
Building/Structural Category	**PPV, in/sec**
Reinforced-concrete, steel or timber	0.500
Non-engineered timber and masonry buildings	0.200
Buildings extremely susceptible to vibration damage	0.120

Vibration Velocities for Construction Equipment				
Equipment	**PPV at 25 Feet (Inches/Second)**	**PPV at 50 Feet (Inches/Second)**	**VdB at 25 feet (Micro-Inches/Second)**	**VdB at 50 feet (Micro-Inches/Second)**
Caisson Drill	0.089	0.031	87	78
Excavator	0.040	0.014	80	71
Pile Driver (Sonic)	0.170	0.060	93	84
Small Bulldozer	0.003	0.001	58	49

Vibration Annoyance Analysis							
Sensitive Receptor	**Address**	**Distance (feet)**	**Vibration Level at Structure (VdB)**	**Coupling to Building Foundation**	**Vibration Level at Structure after Adjustment(VdB)**	**Threshold (VdB)**	**Exceed Threshold?**
Dignity Health - Northridge Hospital Medical Center	18300 Roscoe Blvd., Northridge, CA 91325	50	84	-13	71	65	Yes
Lima Recording Studios	8345 Reseda Blvd., Northridge, CA 91324	420	56	-	56	65	No

Historic Uses Vibration Analysis						
Historic Uses	**Address**	**Distance from Construction Activity (feet)**	**Reference Equipment**	**Reference Vibration Level**	**PPV at Historic Use (Inches/Second) - Excavator**	**Exceed Threshold?**
Cleveland High School	8140 Vanalden Ave., Reseda, CA 91335	50	Pile Driver (Sonic)	0.17	0.0601	No
Lifehouse Church	18355 Roscoe Blvd., Northridge, CA 91325	95	Pile Driver (Sonic)	0.089	0.0120	No
"El Encanto" Historic Residential Structure	17360 Chase St., Northridge, CA 91325	410	Caisson Drill	0.089	0.0013	No
Los Angeles Fire Department Station 104	8349 Winnetka Ave., Winnetka, CA 91306	475	Pile Driver (Sonic)	0.17	0.0021	No
Northridge Middle School /a/	17960 Chase St, Northridge, CA 91325	630	Pile Driver (Sonic)	0.17	0.0013	No

/a/ The distance between construction activity and property line of Northridge Middle School is 380 feet, but the distance to the nearest structure within the

Source: FTA, Transit Noise and Vibration Impact Assessment, September 2018; New Hampshire Department of Transportation, Ground Vibrations Emanating from Construction Equipment, September 8, 2012

Noise Monitoring Data

Site 1: 20363 Roscoe Blvd, Canoga Park, CA 91306

Session Report

9/10/2021

Information Panel

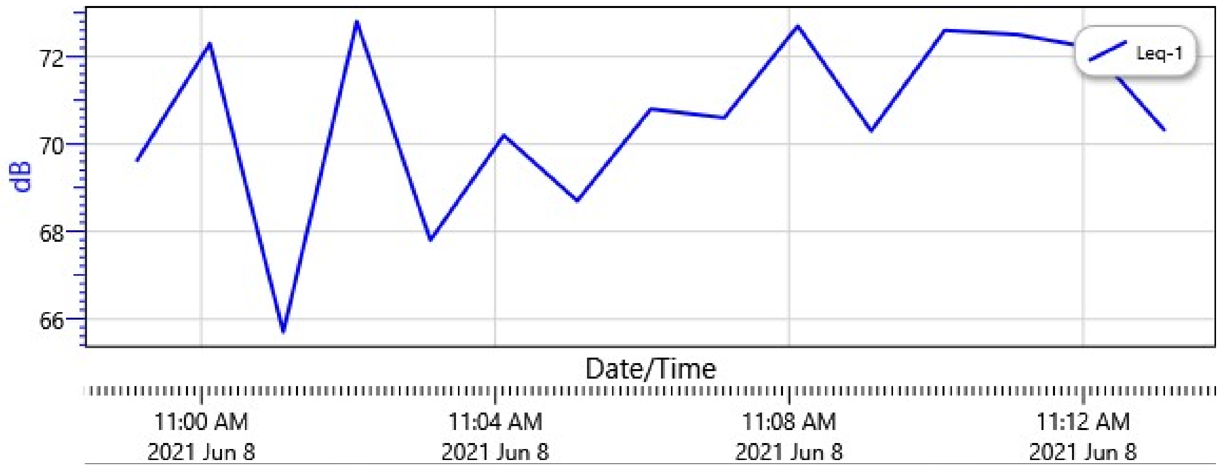
Name	LADWP Roscoe_Site1
Start Time	6/8/2021 10:58:07 AM
Stop Time	6/8/2021 11:13:07 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	70.9 dB	Lmax	1	80.1 dB
Lmin	1	46.8 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site1: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 10:59:07 AM	69.6
11:00:07 AM	72.3
11:01:07 AM	65.7
11:02:07 AM	72.8
11:03:07 AM	67.8
11:04:07 AM	70.2
11:05:07 AM	68.7
11:06:07 AM	70.8
11:07:07 AM	70.6
11:08:07 AM	72.7
11:09:07 AM	70.3
11:10:07 AM	72.6
11:11:07 AM	72.5
11:12:07 AM	72.2
11:13:07 AM	70.3

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 10:57 AM

Monitoring Site Number: 1 Monitoring Site Address: 20363 Roscoe Blvd.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 10 ft

Approximate distance of Sound Level Meter from Project Site: 45 ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba	n/a	n/a
L_{eq}	71.0 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Middle of Mason and Oso Ave.
2. S218.
3.
4.

Site 2: Keokuk Ave & Community St, Los Angeles, CA 91306

Session Report

9/10/2021

Information Panel

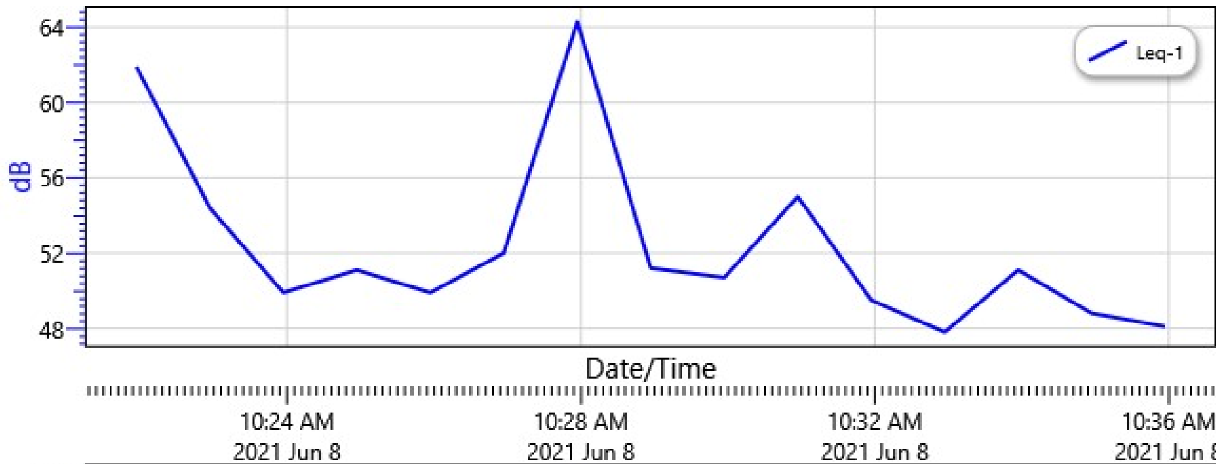
Name	LADWP Roscoe_Site2
Start Time	6/8/2021 10:18:17 AM
Stop Time	6/8/2021 10:35:57 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:02

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.9 dB	Lmax	1	71 dB
Lmin	1	46.1 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site2: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 10:21:57 AM	61.9
10:22:57 AM	54.4
10:23:57 AM	49.9
10:24:57 AM	51.1
10:25:57 AM	49.9
10:26:57 AM	52
10:27:57 AM	64.3
10:28:57 AM	51.2
10:29:57 AM	50.7
10:30:57 AM	55
10:31:57 AM	49.5
10:32:57 AM	47.8
10:33:57 AM	51.1
10:34:57 AM	48.8
10:35:57 AM	48.1

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 10:20 AM

Monitoring Site Number: 2 Monitoring Site Address: Community St. / Keokuk Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 5ft.

Approximate distance of Sound Level Meter from Project Site: 430ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba	n/a	n/a
L_{eq}	56.0 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. 1st monitor of the day 6/8.
flight route
2. NM taken LOS w/ Roscoe Blvd.
3. S216
4.

Site 3: Roscoe Blvd & Winnetka Ave, Los Angeles, CA 91306

Session Report

9/10/2021

Information Panel

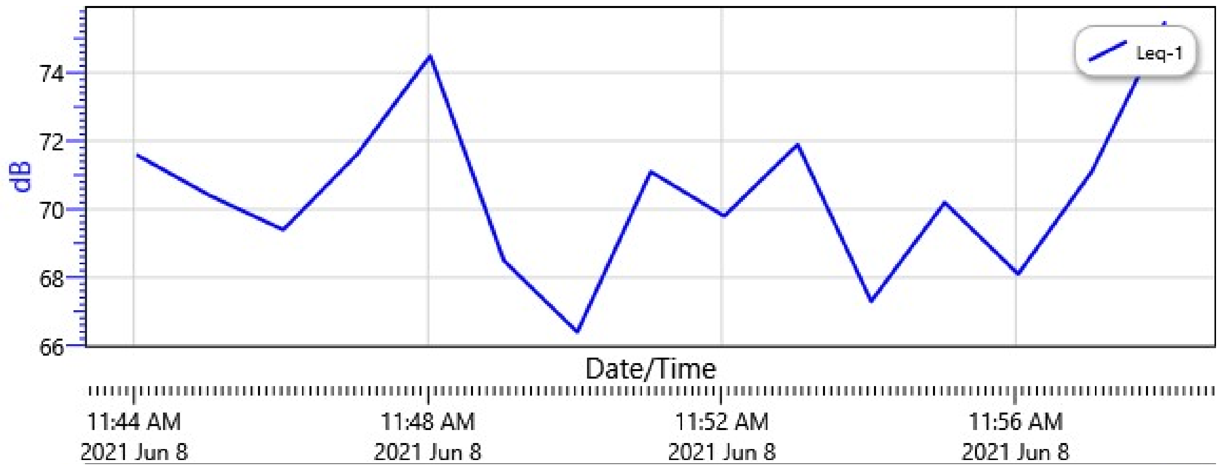
Name	LADWP Roscoe_Site3
Start Time	6/8/2021 11:43:02 AM
Stop Time	6/8/2021 11:58:02 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	71.1 dB	Lmax	1	87.7 dB
Lmin	1	56.8 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site3: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 11:44:02 AM	71.6
11:45:02 AM	70.4
11:46:02 AM	69.4
11:47:02 AM	71.6
11:48:02 AM	74.5
11:49:02 AM	68.5
11:50:02 AM	66.4
11:51:02 AM	71.1
11:52:02 AM	69.8
11:53:02 AM	71.9
11:54:02 AM	67.3
11:55:02 AM	70.2
11:56:02 AM	68.1
11:57:02 AM	71.1
11:58:02 AM	75.5

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 11:42 AM

Monitoring Site Number: 3 Monitoring Site Address: Roscoe Blvd / Winnetka Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 10 ft

Approximate distance of Sound Level Meter from Project Site: 40 ft.

Receptor Land Use (Check One) ☐ Residential / Institutional ☑ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	71.2 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. bus route / stop
2. S219
3.
4.

Site 4: 8239 Quartz Ave, Canoga Park, CA 91306

Session Report

9/10/2021

Information Panel

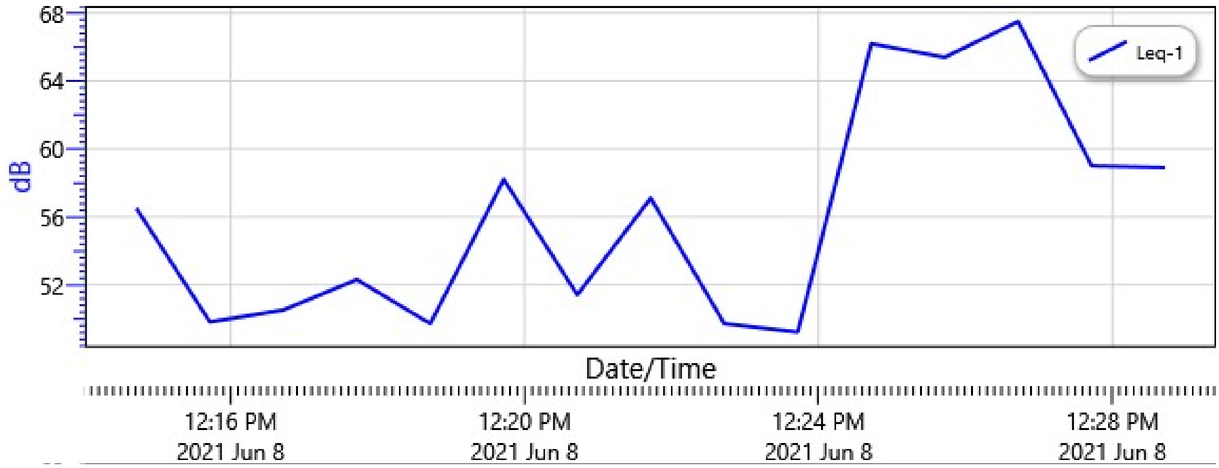
Name	LADWP Roscoe_Site4
Start Time	6/8/2021 12:13:43 PM
Stop Time	6/8/2021 12:28:43 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	60.5 dB	Lmax	1	79.3 dB
Lmin	1	46.1 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site4: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 12:14:43 PM	56.5
12:15:43 PM	49.8
12:16:43 PM	50.5
12:17:43 PM	52.3
12:18:43 PM	49.7
12:19:43 PM	58.2
12:20:43 PM	51.4
12:21:43 PM	57.1
12:22:43 PM	49.7
12:23:43 PM	49.2
12:24:43 PM	66.2
12:25:43 PM	65.4
12:26:43 PM	67.5
12:27:43 PM	59
12:28:43 PM	58.9

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 12:15pm

Monitoring Site Number: 4 Monitoring Site Address: 8239 Quartz Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 15 ft.

Approximate distance of Sound Level Meter from Project Site: 400 ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	60.6 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. S220

2.

3.

4.

Site 5: 8343 Tunney Ave, Northridge, CA 91324

Session Report

9/10/2021

Information Panel

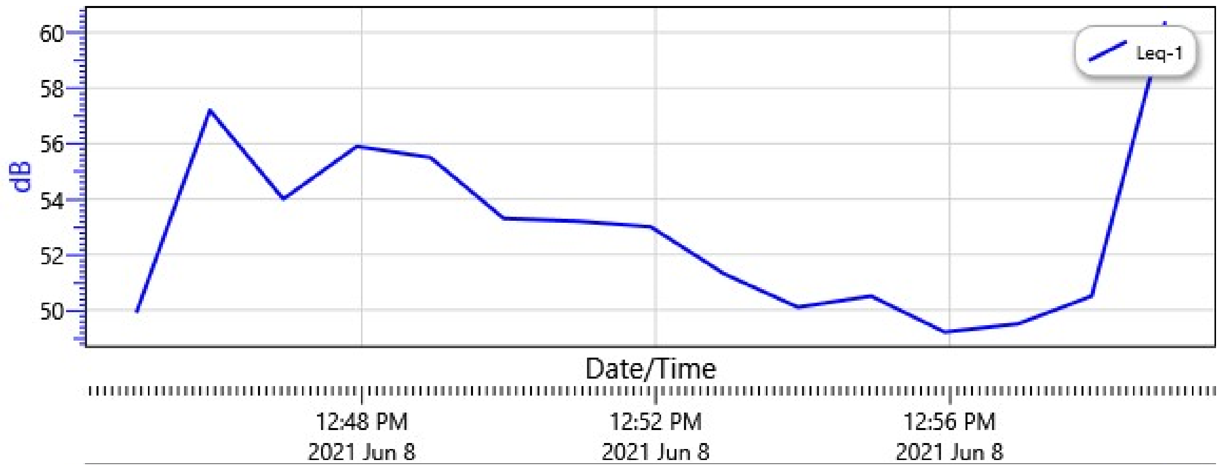
Name	LADWP Roscoe_Site5
Start Time	6/8/2021 12:43:56 PM
Stop Time	6/8/2021 12:58:56 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54.2 dB	Lmax	1	72.7 dB
Lmin	1	46.5 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site5: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 12:44:56 PM	49.9
12:45:56 PM	57.2
12:46:56 PM	54
12:47:56 PM	55.9
12:48:56 PM	55.5
12:49:56 PM	53.3
12:50:56 PM	53.2
12:51:56 PM	53
12:52:56 PM	51.3
12:53:56 PM	50.1
12:54:56 PM	50.5
12:55:56 PM	49.2
12:56:56 PM	49.5
12:57:56 PM	50.5
12:58:56 PM	60.4

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A
Date: 6/8/21 Day of Week: Tuesday Time: 12:44pm
Monitoring Site Number: 5 Monitoring Site Address: 8343 Tunney Ave.
Measurement Taken By: Billy
Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South
Approximate distance of Sound Level Meter from Receptor Location: 5ft
Approximate distance of Sound Level Meter from Project Site: 470ft

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational
Sound Level Meter: Make and Model: Serial Number:
Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts
Duration of Measurement: 15m

Check the measurement purpose:
☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	54.2 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. flight rate
2. S222
3.
4.

Site 6: Roscoe Blvd & Tampa Ave, Los Angeles, CA 91324

Session Report

9/10/2021

Information Panel

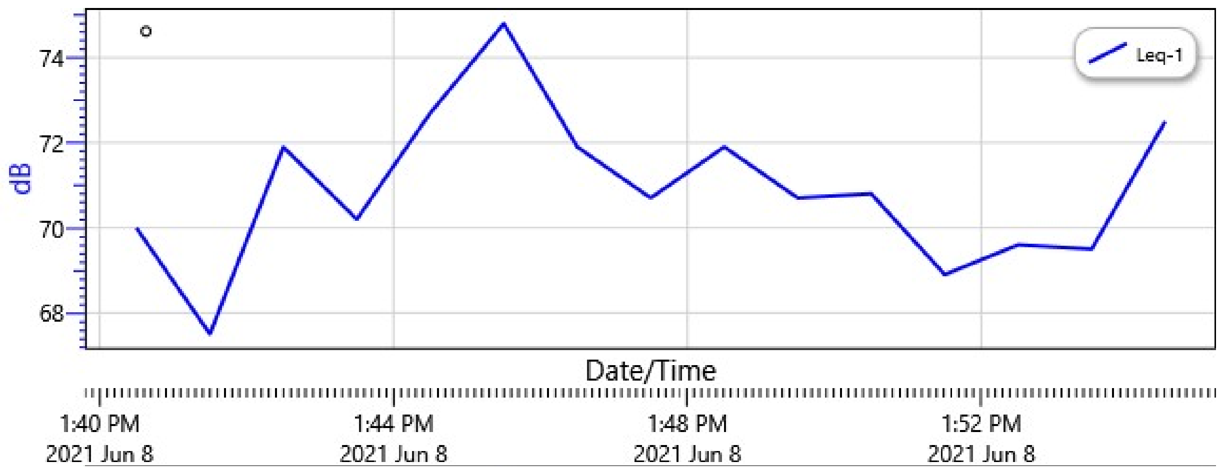
Name	LADWP Roscoe_Site6
Start Time	6/8/2021 1:39:30 PM
Stop Time	6/8/2021 1:54:30 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	71.2 dB	Lmax	1	80.8 dB
Lmin	1	58.1 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site6: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 1:40:30 PM	70
1:41:30 PM	67.5
1:42:30 PM	71.9
1:43:30 PM	70.2
1:44:30 PM	72.7
1:45:30 PM	74.8
1:46:30 PM	71.9
1:47:30 PM	70.7
1:48:30 PM	71.9
1:49:30 PM	70.7
1:50:30 PM	70.8
1:51:30 PM	68.9
1:52:30 PM	69.6
1:53:30 PM	69.5
1:54:30 PM	72.5

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 1:40pm

Monitoring Site Number: 6 Monitoring Site Address: Roscoe Blvd/Tampa Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph (km/hr) Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location:

Approximate distance of Sound Level Meter from Project Site: 75Ft.

Receptor Land Use (Check One) ☐ Residential / Institutional ☑ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	71.3 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. S223

2.

3.

4.

Site 7: Vanalden Ave & Cantara St, Los Angeles, CA 91335

Session Report

9/10/2021

Information Panel

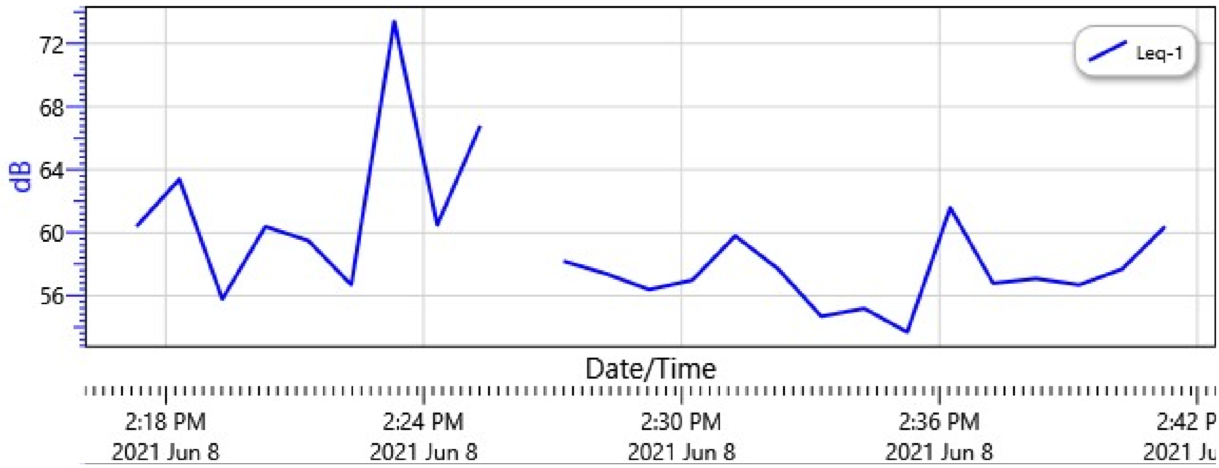
Name	LADWP Roscoe_Site7
Start Time	6/8/2021 2:16:19 PM
Stop Time	6/8/2021 2:41:15 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:24:53

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	62.4 dB	Lmax	1	85.5 dB
Lmin	1	47.9 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site7: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 2:17:19 PM	60.4
2:18:19 PM	63.4
2:19:19 PM	55.8
2:20:19 PM	60.4
2:21:19 PM	59.5
2:22:19 PM	56.7
2:23:19 PM	73.4
2:24:19 PM	60.5
2:25:19 PM	66.8
2:27:15 PM	58.2
2:28:15 PM	57.4
2:29:15 PM	56.4
2:30:15 PM	57
2:31:15 PM	59.8
2:32:15 PM	57.7
2:33:15 PM	54.7
2:34:15 PM	55.2
2:35:15 PM	53.7
2:36:15 PM	61.6
2:37:15 PM	56.8
2:38:15 PM	57.1
2:39:15 PM	56.7
2:40:15 PM	57.7
2:41:15 PM	60.4

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: Vanalden Ave / Cantara St.

Monitoring Site Number: 7 Monitoring Site Address:

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 5 ft.

Approximate distance of Sound Level Meter from Project Site: 440 ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba	n/a	n/a
L_{eq}	57.9 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Adjacent to Cleveland High School
School bell noises
2. Slight LOS to Roscoe Blvd.
Paused NM at 2:26pm b/c of unusual
3. noise (loud cars, loud mufflers, non-standard engines) - crossing idling.
4. Session is ~24min./Current study is 15m.,
does not include unusual noise and
peak school bus travel.

S224

Site 8: Roscoe Blvd. at Miller Career and Transition Center

Session Report

9/10/2021

Information Panel

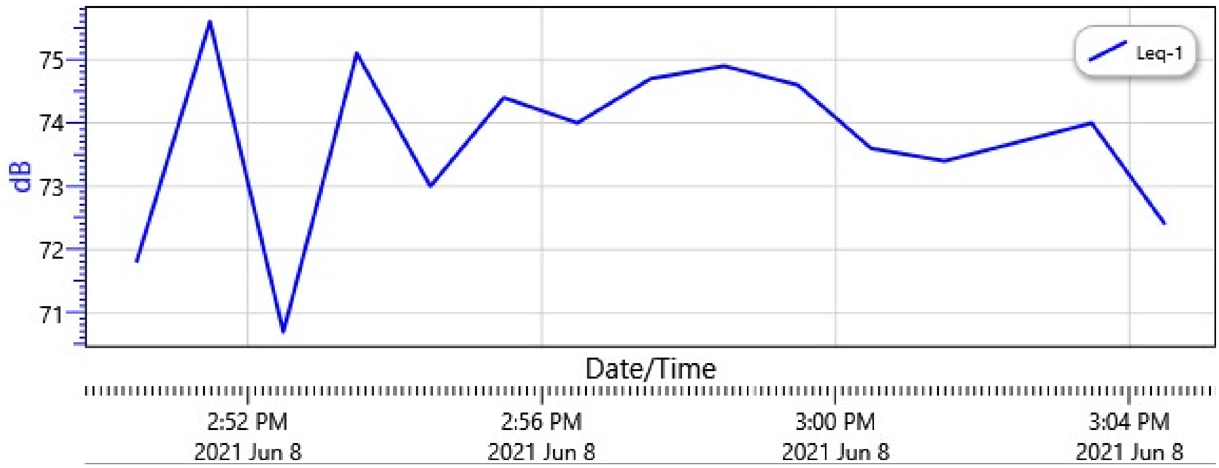
Name	LADWP Roscoe_Site8
Start Time	6/8/2021 2:49:29 PM
Stop Time	6/8/2021 3:04:29 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	73.8 dB	Lmax	1	82.4 dB
Lmin	1	55.3 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site8: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/8/2021 2:50:29 PM	71.8
2:51:29 PM	75.6
2:52:29 PM	70.7
2:53:29 PM	75.1
2:54:29 PM	73
2:55:29 PM	74.4
2:56:29 PM	74
2:57:29 PM	74.7
2:58:29 PM	74.9
2:59:29 PM	74.6
3:00:29 PM	73.6
3:01:29 PM	73.4
3:02:29 PM	73.7
3:03:29 PM	74
3:04:29 PM	72.4

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/8/21 Day of Week: Tuesday Time: 2:49 pm

Monitoring Site Number: 8 Monitoring Site Address: Roscoe Blvd at Miller Center

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 15ft.

Approximate distance of Sound Level Meter from Project Site: 50 ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ________ Serial Number: ________

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	73.9 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. S225
2. Miller High School goes by Miller CTC (Career and technical center)
3.
4.

Site 9: 8217 Geyser Ave, Reseda, CA 91335

Session Report

9/10/2021

Information Panel

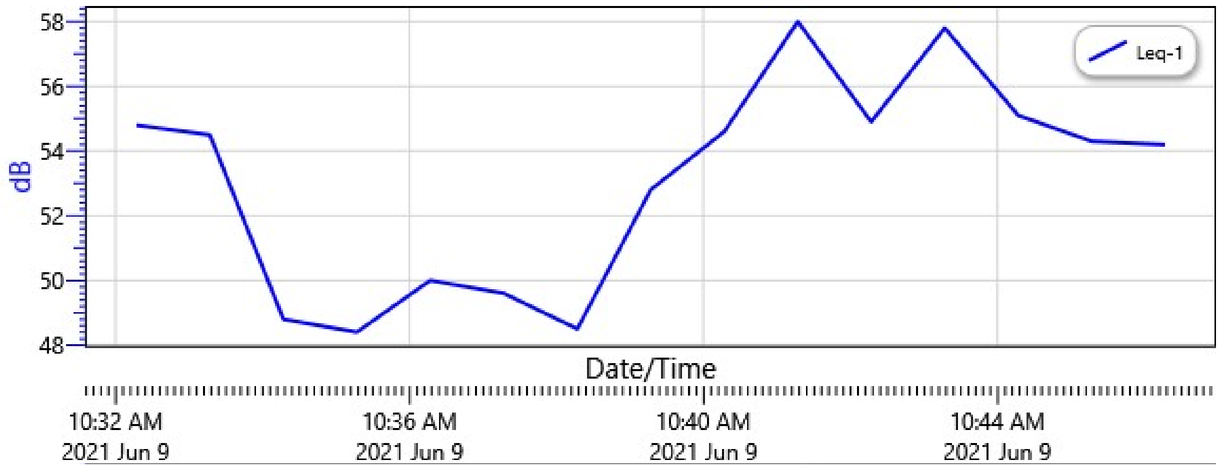
Name	LADWP Roscoe_Site9
Start Time	6/9/2021 10:31:17 AM
Stop Time	6/9/2021 10:46:17 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	54.1 dB	Lmax	1	69 dB
Lmin	1	45.6 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site9: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 10:32:17 AM	54.8
10:33:17 AM	54.5
10:34:17 AM	48.8
10:35:17 AM	48.4
10:36:17 AM	50
10:37:17 AM	49.6
10:38:17 AM	48.5
10:39:17 AM	52.8
10:40:17 AM	54.6
10:41:17 AM	58
10:42:17 AM	54.9
10:43:17 AM	57.8
10:44:17 AM	55.1
10:45:17 AM	54.3
10:46:17 AM	54.2

Noise Measurement Report Form

Project: Roscoe Trunk Line   Contract No (s): N/A

Date: 6/9/21   Day of Week: Wed   Time: 10:30 AM

Monitoring Site Number: 9   Monitoring Site Address: 8217 Geyser Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr]   Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 15ft.

Approximate distance of Sound Level Meter from Project Site: 300ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ____________ Serial Number: ____________

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	54.1 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. 1st monitor of the day 6/9.
2. flight route
3. birds chirping
4. 5226

Site 10: Roscoe Blvd. at Northridge Hospital Medical Center

(18330 Roscoe Blvd, Northridge, CA 91325)

Session Report

9/10/2021

Information Panel

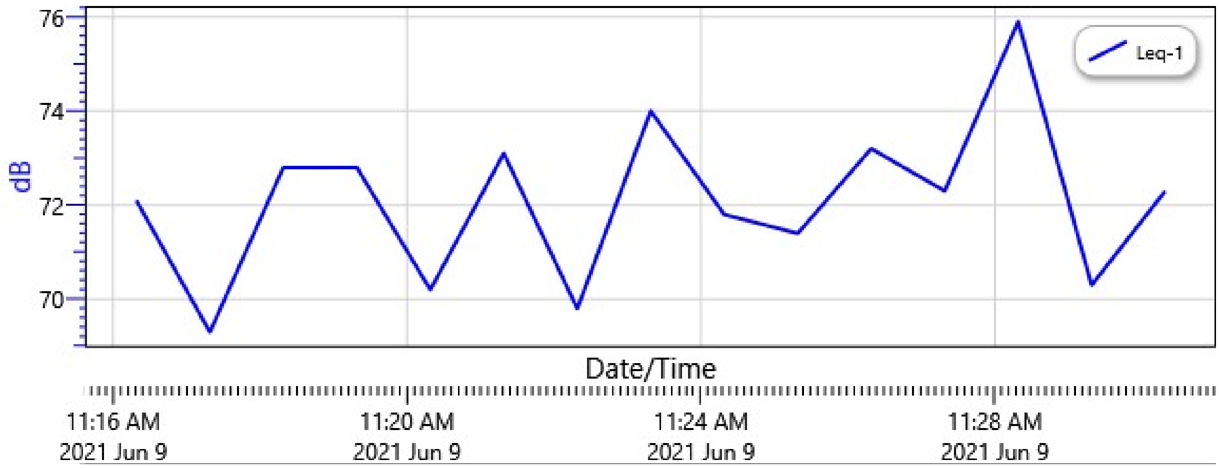
Name	LADWP Roscoe_Site10
Start Time	6/9/2021 11:15:19 AM
Stop Time	6/9/2021 11:30:19 AM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	72.4 dB	Lmax	1	82.4 dB
Lmin	1	51.9 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site10: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 11:16:19 AM	72.1
11:17:19 AM	69.3
11:18:19 AM	72.8
11:19:19 AM	72.8
11:20:19 AM	70.2
11:21:19 AM	73.1
11:22:19 AM	69.8
11:23:19 AM	74
11:24:19 AM	71.8
11:25:19 AM	71.4
11:26:19 AM	73.2
11:27:19 AM	72.3
11:28:19 AM	75.9
11:29:19 AM	70.3
11:30:19 AM	72.3

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/9/21 Day of Week: Wed Time: 11:15 AM

Monitoring Site Number: 10 Monitoring Site Address: Northridge Hospital Medical Center

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 15 ft

Approximate distance of Sound Level Meter from Project Site: 50 ft

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	72.4 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. planes overhead
2. S227
3.
4.

Site 11: 8217 Garden Grove Ave, Reseda, CA 91335

Session Report

9/10/2021

Information Panel

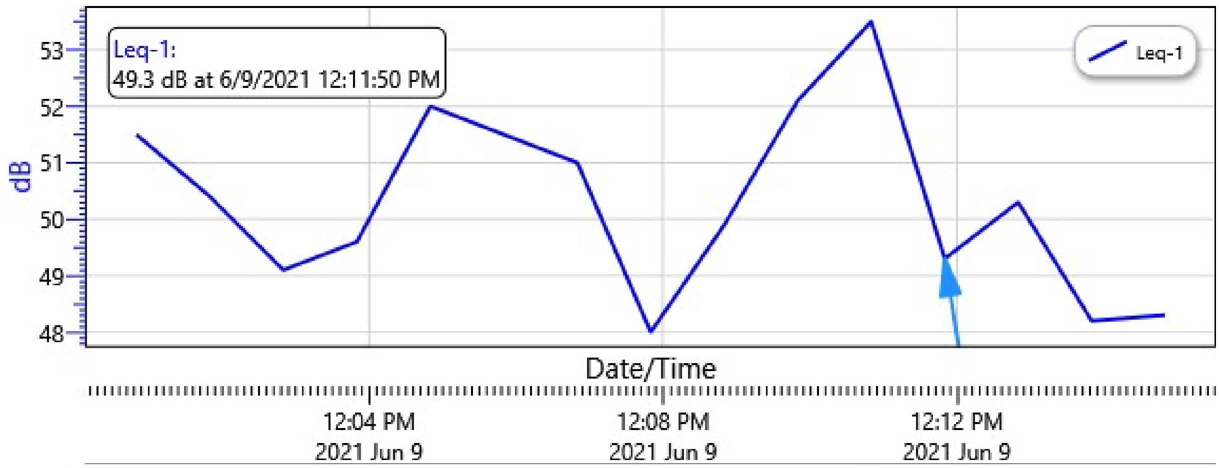
Name	LADWP Roscoe_Site11
Start Time	6/9/2021 11:59:50 AM
Stop Time	6/9/2021 12:14:50 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	50.5 dB	Lmax	1	60.9 dB
Lmin	1	46 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site11: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 12:00:50 PM	51.5
12:01:50 PM	50.4
12:02:50 PM	49.1
12:03:50 PM	49.6
12:04:50 PM	52
12:05:50 PM	51.5
12:06:50 PM	51
12:07:50 PM	48
12:08:50 PM	49.9
12:09:50 PM	52.1
12:10:50 PM	53.5
12:11:50 PM	49.3
12:12:50 PM	50.3
12:13:50 PM	48.2
12:14:50 PM	48.3

Noise Measurement Report Form

Project: Roscoe Trunk Line   Contract No (s): N/A

Date: 6/9/21   Day of Week: Wed   Time: 12:00pm

Monitoring Site Number: 11   Monitoring Site Address: 8217 Garden Grove Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr]   Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 5 ft

Approximate distance of Sound Level Meter from Project Site: 300 ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114 dba	n/a	n/a
L_{eq}	50.6 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. planes overhead
2. S228
3.
4.

Site 12: Burton St & Jamieson Ave, Los Angeles, CA 91335

Session Report

9/10/2021

Information Panel

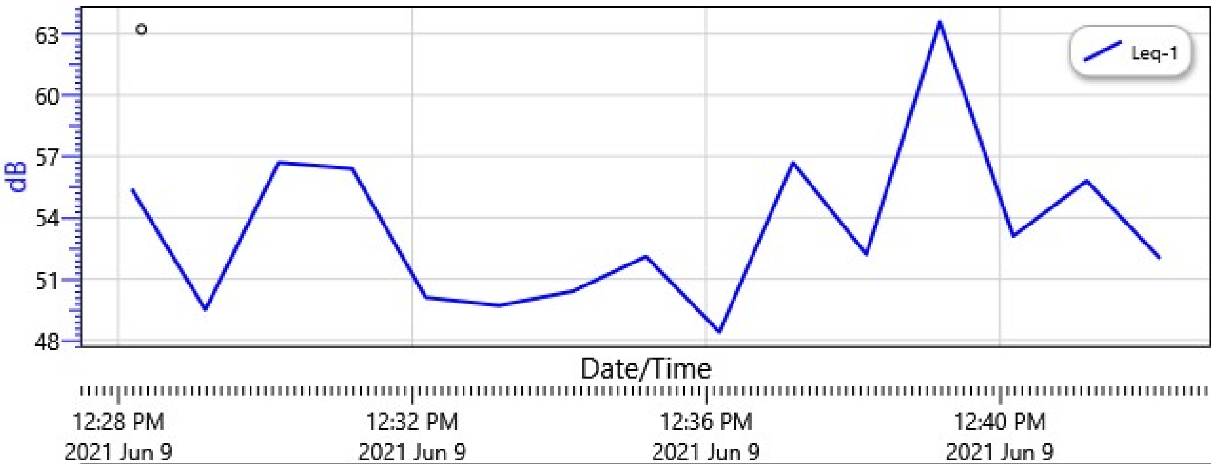
Name	LADWP Roscoe_Site12
Start Time	6/9/2021 12:27:11 PM
Stop Time	6/9/2021 12:42:11 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.6 dB	Lmax	1	76.1 dB
Lmin	1	47.2 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site12: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 12:28:11 PM	55.4
12:29:11 PM	49.5
12:30:11 PM	56.7
12:31:11 PM	56.4
12:32:11 PM	50.1
12:33:11 PM	49.7
12:34:11 PM	50.4
12:35:11 PM	52.1
12:36:11 PM	48.4
12:37:11 PM	56.7
12:38:11 PM	52.2
12:39:11 PM	63.6
12:40:11 PM	53.1
12:41:11 PM	55.8
12:42:11 PM	52

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/9/21 Day of Week: Wed Time: 12:26 AM

Monitoring Site Number: 12 Monitoring Site Address: Burton St./Jamieson Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph (km/hr) Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 10 ft.

Approximate distance of Sound Level Meter from Project Site: 275ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba.	n/a	n/a
L_{eq}	55.7 dba.		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Planes overhead
2. S229
3.
4.

Site 13: 8336 White Oak Ave, Northridge, CA 91325

Session Report

9/10/2021

Information Panel

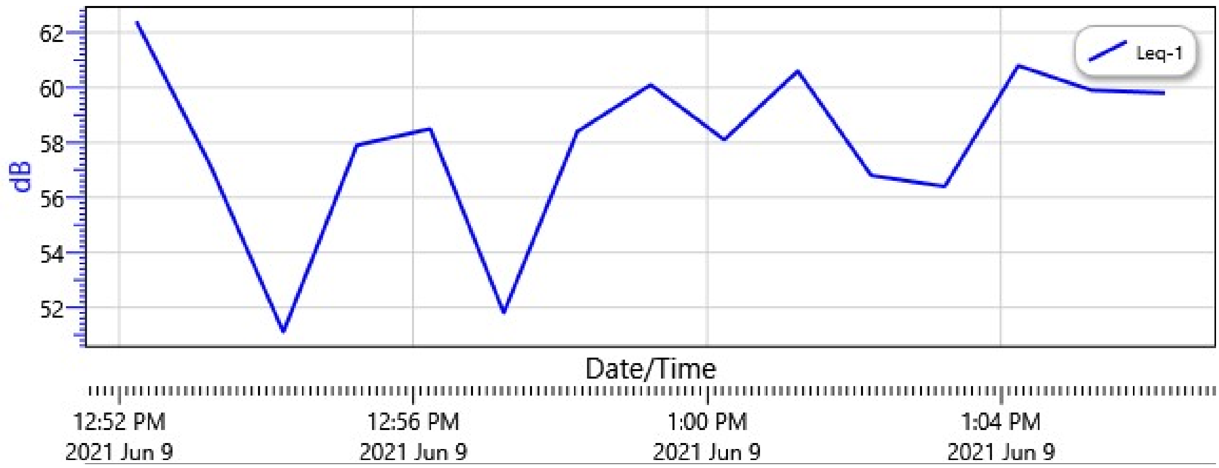
Name	LADWP Roscoe_Site13
Start Time	6/9/2021 12:51:14 PM
Stop Time	6/9/2021 1:06:14 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	58.8 dB	Lmax	1	73.2 dB
Lmin	1	48 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site13: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 12:52:14 PM	62.4
12:53:14 PM	57.2
12:54:14 PM	51.1
12:55:14 PM	57.9
12:56:14 PM	58.5
12:57:14 PM	51.8
12:58:14 PM	58.4
12:59:14 PM	60.1
1:00:14 PM	58.1
1:01:14 PM	60.6
1:02:14 PM	56.8
1:03:14 PM	56.4
1:04:14 PM	60.8
1:05:14 PM	59.9
1:06:14 PM	59.8

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/9/21 Day of Week: Wed Time: 12:50pm

Monitoring Site Number: 13 Monitoring Site Address: 8336 White Oak Ave.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 5 ft.

Approximate distance of Sound Level Meter from Project Site: 475 ft

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: ______ Serial Number: ______

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba.	n/a	n/a
L_{eq}	58.8 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. S230
2.
3.
4.

Site 14: 17501 Burton St, Northridge, CA 91325

Session Report

9/10/2021

Information Panel

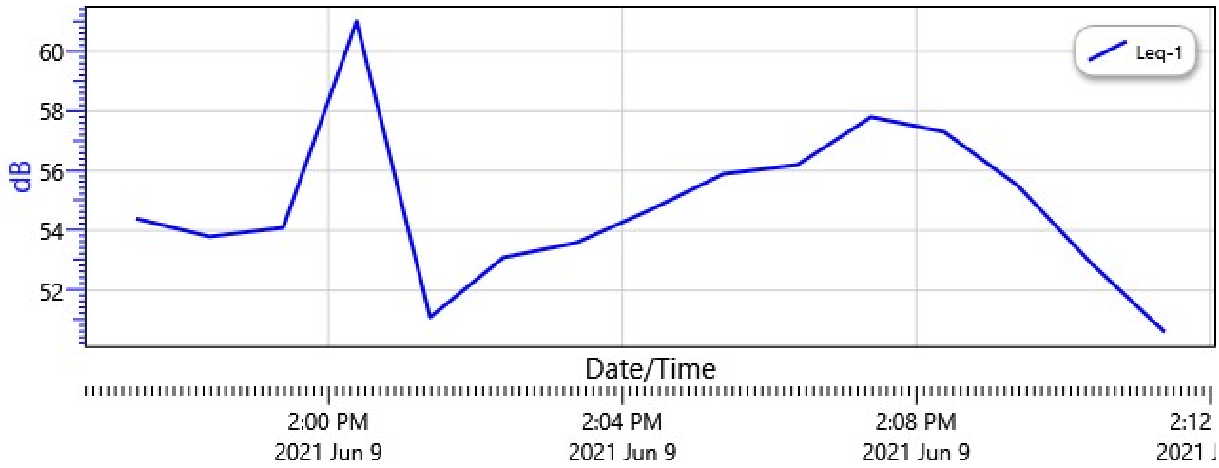
Name	LADWP Roscoe_Site14
Start Time	6/9/2021 1:56:23 PM
Stop Time	6/9/2021 2:11:23 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	55.6 dB	Lmax	1	73.9 dB
Lmin	1	48 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site14: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 1:57:23 PM	54.4
1:58:23 PM	53.8
1:59:23 PM	54.1
2:00:23 PM	61
2:01:23 PM	51.1
2:02:23 PM	53.1
2:03:23 PM	53.6
2:04:23 PM	54.7
2:05:23 PM	55.9
2:06:23 PM	56.2
2:07:23 PM	57.8
2:08:23 PM	57.3
2:09:23 PM	55.5
2:10:23 PM	52.9
2:11:23 PM	50.6

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/9/21 Day of Week: Wed Time: 1:55pm

Monitoring Site Number: 14 Monitoring Site Address: 17501 Burton St.

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph (km/hr) Approximate Wind Direction: From the South.

Approximate distance of Sound Level Meter from Receptor Location: 5 ft.

Approximate distance of Sound Level Meter from Project Site: 300 ft

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15m.

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba	n/a	n/a
L_{eq}	55.6 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Planes overhead
2. Construction at 17361 Roscoe Blvd
3. S232
4.

Site 15: Roscoe Blvd. at St. Mary and St. Athanasius Coptic Orthodox Church

(17431 Roscoe Blvd, Northridge, CA 91325)

Session Report

9/10/2021

Information Panel

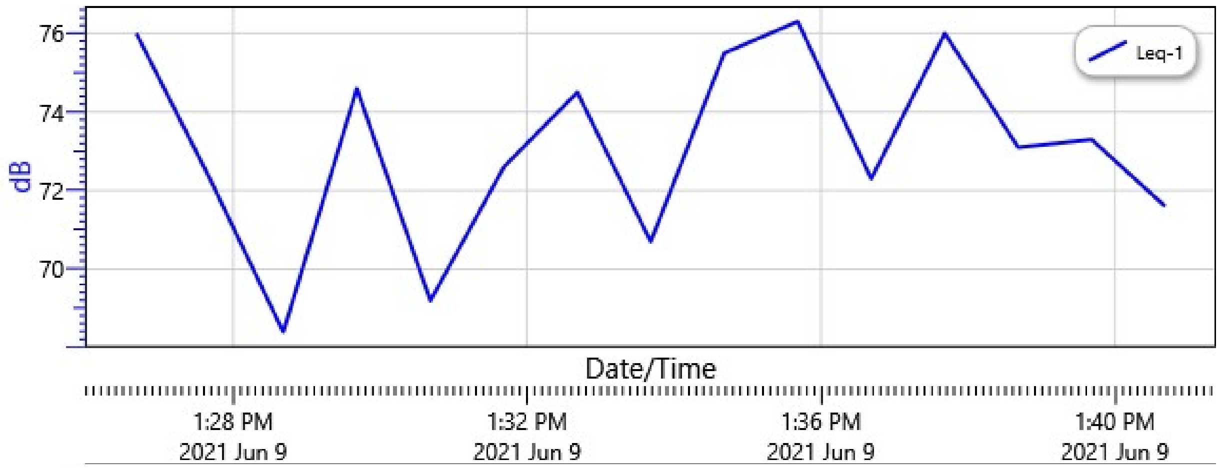
Name	LADWP Roscoe_Site15
Start Time	6/9/2021 1:25:41 PM
Stop Time	6/9/2021 1:40:41 PM
Device Name	BGS100001
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	
Run Time	00:15:00

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	73.6 dB	Lmax	1	87.6 dB
Lmin	1	51.4 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	OFF
Exchange Rate	2	3 dB	Weighting	2	A
Response	2	SLOW			

Logged Data Chart

LADWP Roscoe_Site15: Logged Data Chart



Logged Data Table

Date/Time	Leq-1
6/9/2021 1:26:41 PM	76
1:27:41 PM	72.3
1:28:41 PM	68.4
1:29:41 PM	74.6
1:30:41 PM	69.2
1:31:41 PM	72.6
1:32:41 PM	74.5
1:33:41 PM	70.7
1:34:41 PM	75.5
1:35:41 PM	76.3
1:36:41 PM	72.3
1:37:41 PM	76
1:38:41 PM	73.1
1:39:41 PM	73.3
1:40:41 PM	71.6

Noise Measurement Report Form

Project: Roscoe Trunk Line Contract No (s): N/A

Date: 6/9/21 Day of Week: Wed Time: 1:25pm

Monitoring Site Number: 19 Monitoring Site Address: St. Mary Orthodox Church

Measurement Taken By: Billy

Approximate Wind Speed: 8 mph [km/hr] Approximate Wind Direction: From the South

Approximate distance of Sound Level Meter from Receptor Location: 10ft to Property line.

Approximate distance of Sound Level Meter from Project Site: 25ft.

Receptor Land Use (Check One) ☑ Residential / Institutional ☐ Commercial / Recreational

Sound Level Meter: Make and Model: Serial Number:

Meter Setting ☑ A-Weighted Sound Level (SLOW) ☐ C-Weighted Sound Level (FAST) for Impacts

Duration of Measurement: 15min

Check the measurement purpose:

☑ Baseline condition ☐ Ongoing construction ☐ Major change ☐ Complaint response

Measurement Results:

Measurement Type	Measured Level	Noise Criteria Threshold	Exceedance
Calibration	114dba	n/a	n/a
L_{eq}	73.7 dba		
L_{max}			
L_{dn}			
CNEL			

Field Notes:

1. Add St. Mary's House next door?
2. Construction at 17361 Roscoe Blvd.
3. planes overhead
4. Full name: St. Mary & St. Athanasius Coptic Orthodox Church.

S231