Appendix I

Noise Technical Report

This page intentionally left blank

Pure Water Southern California

Noise Technical Report

April 2025 | 00501.00025.002

Prepared for:

The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, CA 90012

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

This page intentionally left blank

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (cont.)

LIST OF APPENDICES

LIST OF FIGURES

TABLE OF CONTENTS (cont.)

LIST OF TABLES

This page intentionally left blank

ACRONYMS AND ABBREVIATIONS

ADT	average daily traffic
ANSI	American National Standards Institute
AWP	Advanced Water Purification
BAC	biologically activated carbon
CadnaA	Computer Aided Noise Abatement
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
DPR	direct potable reuse
EC	environmental commitment
FTA	Federal Transit Administration
Hz	Hertz
HELIX	HELIX Environmental Planning, Inc.
I-	Interstate
IRP	indirect potable reuse
kHz	kilohertz
L_{DN}	Day-Night level
L_{EQ}	equivalent sound level
L_{MAX}	maximum noise level
MBR	membrane bioreactor
Metropolitan	The Metropolitan Water District of Southern California
MGD	million gallons per day
MM	mitigation measure
mPa	micro-Pascals
NSLU	noise-sensitive land use
PPV	peak particle velocity
Pure Water	Pure Water Southern California

ACRONYMS AND ABBREVIATIONS (cont.)

RCNM	Roadway Construction Noise Model
RO	reverse osmosis
ROW	right-of-way
Sanitation Districts	Los Angeles County Sanitation Districts
SCE	Southern California Edison
SPL	sound pressure level
SR-	State Route
STC	Sound Transmission Class
Warren Facility	A.K. Warren Water Resources Facility
WTP	water treatment plant

EXECUTIVE SUMMARY

This report presents an assessment of potential noise and vibration impacts associated with the Pure Water Southern California (Pure Water) program located within Los Angeles County, California. Pure Water is a partnership between The Metropolitan Water District of Southern California (Metropolitan) and Los Angeles County Sanitation Districts (Sanitation Districts) to develop and implement a regional recycled water program. This report addresses components of Pure Water that are being analyzed at the project level, which consist of the construction and operation of a new Advanced Water Purification (AWP) Facility and associated improvements at a Joint Treatment Site in the City of Carson, and the construction and operation of an approximately 39-mile backbone pipeline from the AWP Facility to the existing San Gabriel Canyon Spreading Grounds in the City of Azusa (referred to as the Proposed Project for the purposes of this report).

Construction of the Joint Treatment Site facilities and the backbone pipeline would generate elevated noise levels at nearby noise-sensitive land uses (NSLUs), requiring mitigation. Environmental Commitments NOI-EC-1 and NOI-EC-2 would be incorporated into the Proposed Project to reduce overall construction noise. Mitigation measure NOI-MM-1 would be implemented to further reduce construction noise. This mitigation measure would require the preparation of a noise control plan to reduce noise levels. Mitigation would reduce noise impacts from construction at the Joint Treatment Joint to less-than-significant levels. Because it cannot be guaranteed that implementation of environmental commitments NOI-EC-1 and NOI-EC-2 and mitigation measure NOI-MM-1 would feasibly reduce construction noise levels at NSLUs near the backbone pipeline to below the applicable significance threshold, impacts from construction of the backbone pipeline are considered potentially significant and unavoidable.

Noise from construction traffic is not anticipated to significantly increase noise levels on nearby roadway segments, and impacts would be less than significant and not require mitigation.

For operation of the Joint Treatment Site facilities, mitigation measure NOI-MM-2 would require that final design plans demonstrate that generated noise would not exceed existing ambient noise levels. Implementation of this measure would reduce operational impacts to less-than-significant levels. Operation of the backbone pipeline would not generate substantial noise levels, and associated impacts would be less than significant.

Vibration-generating construction equipment would potentially result in exceedance of the “strongly perceptible” human annoyance criterion at receptors and the structure damage criterion at older structures. Mitigation measure NOI-MM-4 would require the use of alternative compacting equipment within these distances. Mitigation measure NOI-MM-5 would be required to reduce vibration related to the use of tunnel boring machines. Implementation of these measures would reduce construction vibration impacts to less-than-significant levels.

No impacts were identified related to exposure to aircraft noise.

1.0 INTRODUCTION

HELIX Environmental Planning, Inc. (HELIX) was contracted by The Metropolitan Water District of Southern California (Metropolitan) to conduct noise and vibration analyses for the proposed Pure Water Southern California (Pure Water) program located within Los Angeles County, California. Pure Water is a partnership between Metropolitan and the Los Angeles County Sanitation Districts (Sanitation Districts) to develop and implement a regional recycled water program. This report addresses components of Pure Water that are being analyzed at the project level, which consist of the construction and operation of a new Advanced Water Purification (AWP) Facility and associated improvements at a Joint Treatment Site in the City of Carson, and the construction and operation of an approximately 39-mile backbone pipeline from the AWP Facility to the existing San Gabriel Canyon Spreading Grounds in the City of Azusa (referred to as the Proposed Project for the purposes of this report). This report details the methods and results of the analyses and has been prepared to comply with the California Environmental Quality Act (CEQA).

1.1 PROJECT DESCRIPTION

1.1.1 Background

Metropolitan is a public agency made up of 26 member agencies serving 19 million people in the counties of Los Angeles, Orange, San Diego, Ventura, Riverside, and San Bernardino. Metropolitan imports water from the Colorado River via the Colorado River Aqueduct and from Northern California via the State Water Project to supplement local water supplies. In addition to importing water, Metropolitan supports its member agencies in developing local water conservation, recycling, storage, and resource management programs.

Sanitation Districts consist of 24 independent special districts that form a regional public agency that collects and treats wastewater for over 5.5 million people in Los Angeles County. The Sanitation Districts' A. K. Warren Water Resources Facility (Warren Facility) in the City of Carson is one of eleven wastewater treatment plants in their system and is one of the largest wastewater treatment plants in the world. The Warren Facility provides primary and secondary treatment for approximately 260 million gallons per day (MGD) of wastewater, which currently is discharged to the Pacific Ocean through two outfall tunnels.

Pure Water would be a partnership between Metropolitan and the Sanitation Districts to develop and implement a regional recycled water program. These agencies began exploring the concept for such a program in 2010, and since that time have conducted a number of preliminary evaluations and investigations. These have included a pilot study (2012), a feasibility study (2016), a conceptual planning study (2019), two white papers (2019 and 2020), an economic impact study (2021), a conceptual report on cost recovery alternatives (2023), an addendum to the second white paper (2023), and a variety of technical analyses of proposed system components and processes. In addition, a 0.5-MGD demonstration-scale purification facility at the Warren Facility was constructed and began operations in October 2019. This facility is being used to evaluate treatment performance and to provide an opportunity for public outreach and education.

1.1.2 Overview of Pure Water Southern California

Pure Water would create and distribute a new, sustainable water supply by harvesting the region's largest untapped source of cleaned wastewater. This new water supply would help reduce the region's dependence on imported water and assist in addressing disruptions to imported water supplies. This purified water would not only provide a more diversified water supply to Southern California, it also would enhance Metropolitan's operational resilience, reliability, and flexibility in the face of ongoing challenges, including long-term drought and climate change.

Specifically, Pure Water would involve the purification of cleaned wastewater from the Sanitation District's Warren Facility at the new AWP Facility to produce approximately 150 MGD, or nearly 155,000 acre-feet per year, of sustainable, high-quality water predominantly for indirect potable reuse (IPR) and direct potable reuse (DPR).

Proposed facilities to implement Pure Water include modifications to the existing Warren Facility, a new full-scale AWP Facility (which includes a pump station and ancillary facilities) located at the Warren Facility, and a Workforce Training Center (collectively referred to as the Joint Treatment Site improvements); a backbone pipeline; DPR treatment facilities, pipelines, pump stations; service connections and laterals; and groundwater recharge improvements. The proposed facilities would potentially extend from the City of Carson in Los Angeles County to as far north as the City of Azusa and as far east as the City of La Verne. **Figure 1** shows the location of the Joint Treatment Site and backbone pipeline. **Figure 2** shows the specific location of the existing Warren Facility and proposed Joint Treatment Site.

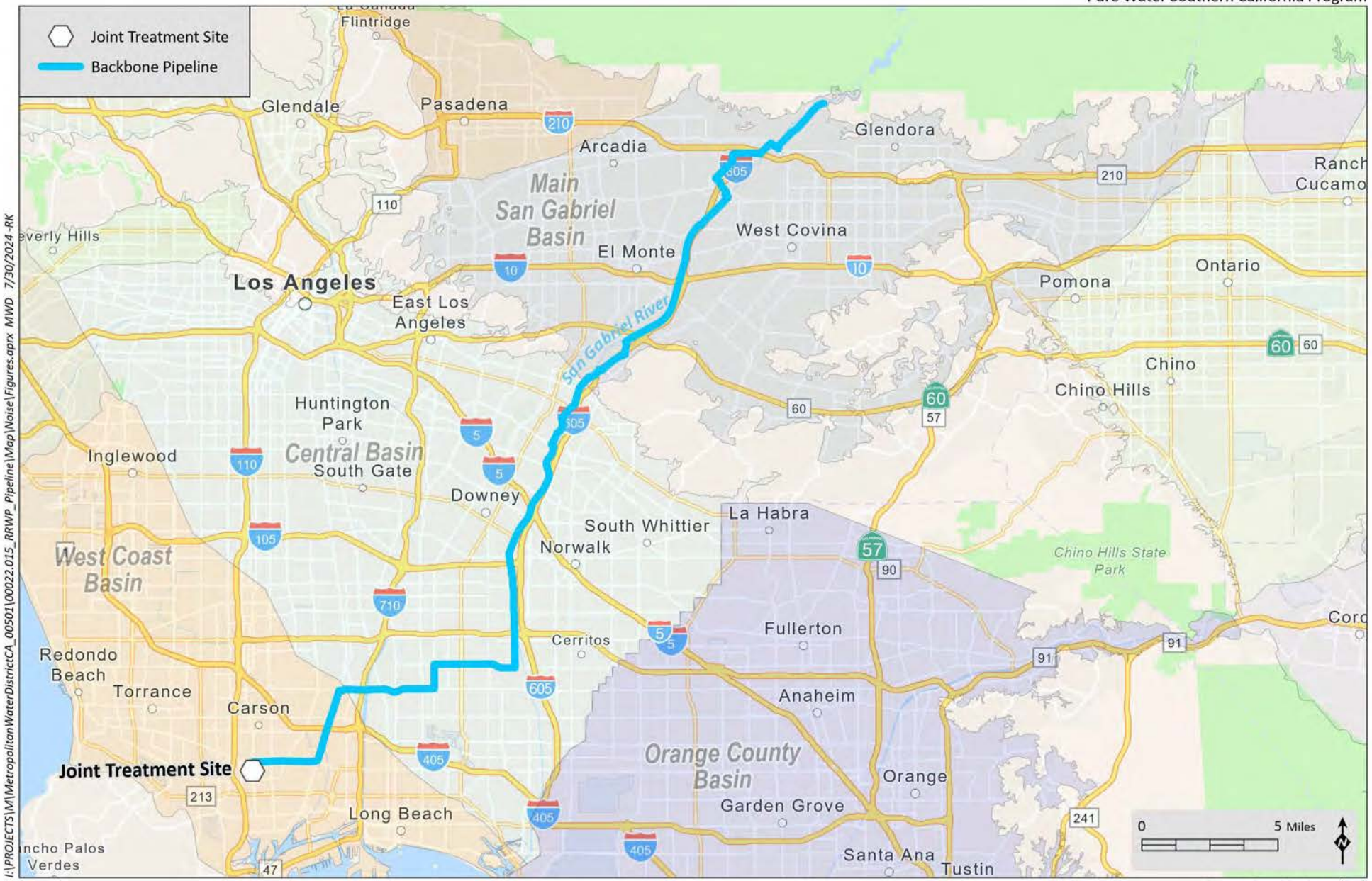
1.2 DESCRIPTION OF COMPONENTS

1.2.1 Joint Treatment Site Facilities

Pure Water would require the construction and operation of various facilities at the Joint Treatment Site. These would include modifications to the existing Warren Facility treatment facilities, construction of a new full-scale AWP Facility (including ancillary facilities and buildings to support operations), and construction of a Workforce Training Center. In addition, facilities to further treat purified water from the AWP Facility to DPR standards are proposed. For the purposes of this analysis, DPR treatment is assumed to occur at a new facility constructed at the Joint Treatment Site. However, other potential locations for DPR treatment include Metropolitan's F.E. Weymouth (Weymouth) water treatment plant (WTP) in the City of La Verne or a potential satellite facility to be located between the Santa Fe Dam area and the Weymouth WTP.

In general, construction activities associated with these treatment facilities would include site clearing; excavation; installation, upgrade, or relocation of utilities; installation of equipment, paving, landscaping, and associated site improvements; construction of buildings and other facilities; and storage of materials and equipment. Operational activities associated with these treatment facilities would include operation and maintenance of facilities, structures, and equipment; storage of equipment and materials; delivery, storage, and management of treatment chemicals; and monitoring of water quality.

Proposed treatment facilities at the Joint Treatment Site would be constructed on the Sanitation Districts' property bounded by West Lomita Boulevard to the south, South Main Street to the east, and

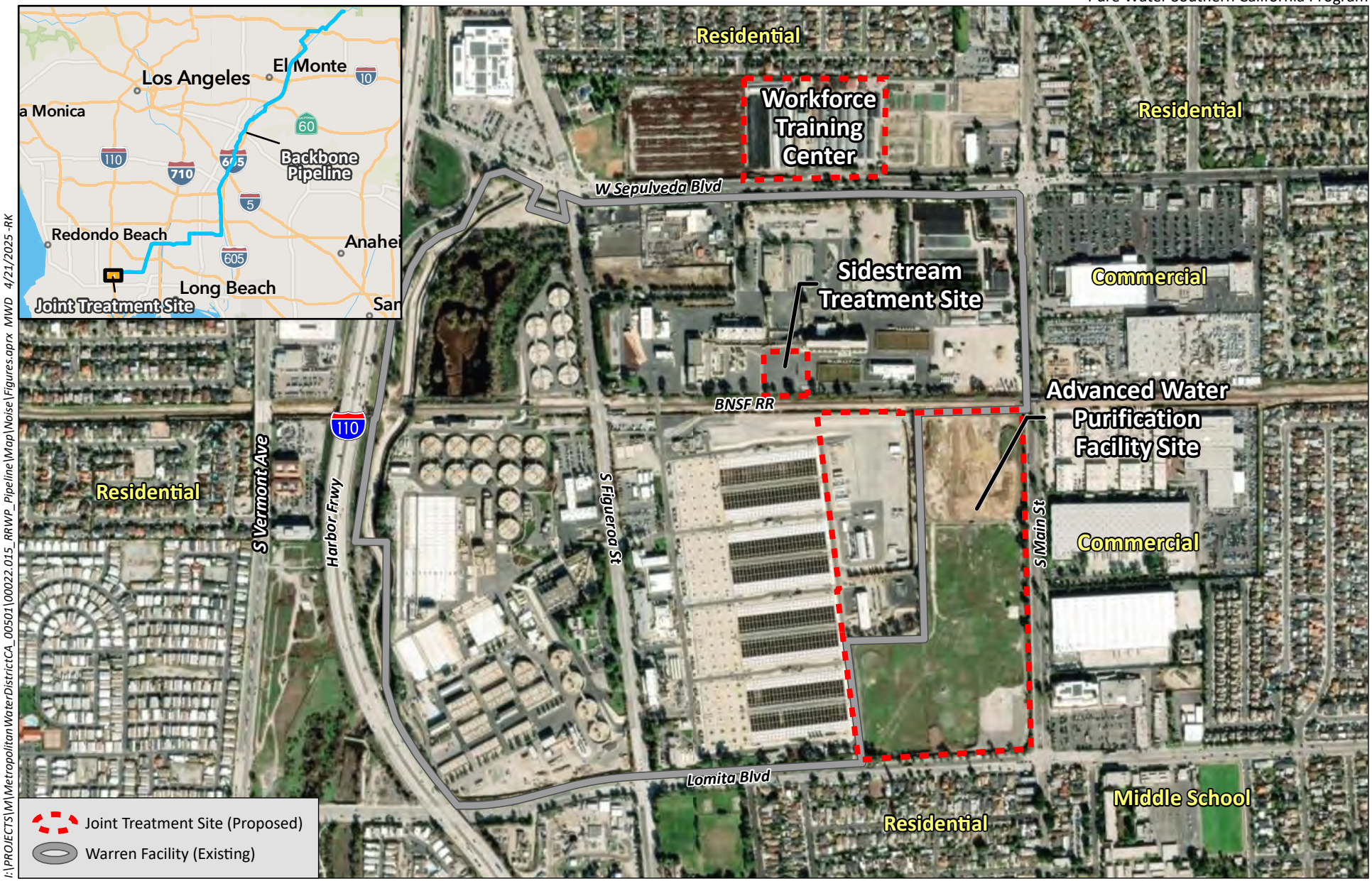


Source: Base Map Layer (Esri)

HELIX Environmental Planning

Proposed Project Area

Figure 1



Source: Base Map Layer (Esri)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 4/21/2025 -RK

HELIX Environmental Planning

Joint Treatment Site

Figure 2

developed portions of the Warren Facility to the north and west. In addition to the construction activities described above, construction activities at this site would include demolition of an existing Sanitation Districts' warehouse and maintenance basin; abandonment of existing oil wells; and modifications to or construction of new biological treatment processes. Water residuals from each treatment process, except for reverse osmosis, would be re-routed back into the wastewater stream flowing into the Warren Facility. Concentrate from the reverse osmosis process water would be discharged to the Pacific Ocean via the existing Warren Facility ocean outfall tunnels. No modifications to the existing outfall tunnels or their operations are proposed as part of this project.

1.2.2 Conveyance System

The conveyance system would be comprised of three pipelines—the backbone pipeline and two DPR pipelines—and at least six associated pump stations. The backbone pipeline would extend approximately 39 miles from the AWP Facility to the existing San Gabriel Canyon Spreading Grounds in the City of Azusa. The southern 25 miles would be 7-foot-diameter pipe, and the northern 14 miles would be up to 9-foot-diameter pipe. The backbone pipeline would potentially pass through the cities of Carson, Long Beach, Lakewood, Cerritos, Bellflower, Norwalk, Downey, Santa Fe Springs, Whittier, Pico Rivera, Industry, El Monte, Baldwin Park, Irwindale, Duarte, and Azusa, as well as unincorporated portions of Los Angeles County. The pipeline would be buried under public roadways and in rights-of-way (ROW) situated along the San Gabriel River that are currently held by Southern California Edison (SCE), Los Angeles Department of Water and Power, Los Angeles County Flood Control District, U.S. Army Corps of Engineers, and private parties.

The backbone pipeline would have the capacity to convey approximately 150 MGD (7-foot portion) to 300 MGD (9-foot portion) of purified water and would deliver some of this water at various locations along the way. Construction activities for the pipelines would be temporary in nature and would utilize a variety of methods based on the characteristics of each portion of the alignment. These methods would include trench excavation and backfill, as well as several different trenchless methods. Trenchless methods would be used where required to minimize impacts to the San Gabriel River, major drainage channels, the transportation system, sensitive resources, and areas with limited ROW.

Temporary construction staging and storage areas would be required along the alignments to support these construction activities. The staging and storage areas would have various uses but generally would include the installation of construction office trailers, temporary utility connections, equipment and materials storage, and construction employee parking. To the extent feasible, previously disturbed sites would be selected based on availability during the final design or at the time when construction is ready to proceed. Site preparation for the staging and storage areas would include clearing and grading, minor excavation for utility connections, fencing, and possible gravel placement.

Operational activities for the pipelines would be minimal and would include patrolling the pipeline, maintaining patrol roads and facilities, securing structures, periodically dewatering the pipeline for inspections/testing, and conducting repairs as needed.

Two separate DPR pipelines would convey purified water eastward from the Santa Fe Dam area or San Gabriel Canyon Spreading Grounds area to the Weymouth WTP or a satellite location. One pipeline would consist of the repurposed San Gabriel Valley Municipal Water District-owned Azusa Pipeline and the other would consist of a newly constructed pipeline. Planning for these DPR conveyance facilities

has not yet been completed. As a result, they will only be addressed at the program level in the current environmental review process and are not included in the analysis in this technical report.

A minimum of six pump stations would be required to pump water from the AWP Facility and along the backbone and DPR pipelines. Three of the proposed pump stations would pump water along the backbone pipeline from the AWP Facility to the San Gabriel Canyon Spreading Grounds. One pump station would be located on the same site as the AWP Facility; a second pump station would be located near Whittier Narrows in the City of Industry, City of Pico Rivera, or Los Angeles County depending on site selection (Whittier Narrows Pump Station); and a third would be located near the Santa Fe Spreading Grounds in the City of Irwindale or City of Baldwin Park (Sante Fe Pump Station). Although the sites for the latter two pump stations have not yet been specifically identified, they would be located adjacent to the backbone pipeline (comprising the backbone conveyance system). Two pump stations would be required to pump water along the Azusa Pipeline and one pump station would be required to pump water along the new DPR pipeline. The approximate locations and specifications of these three DPR pump stations have not been identified at this time. Therefore, the two pump stations along the backbone pipeline and three pump stations along the DPR pipelines will not be further addressed in this technical report.

1.2.3 Groundwater Recharge and Service Connections

Metropolitan would provide metered service connections at various locations along the backbone and DPR pipelines to enable agencies to obtain water for industrial, groundwater recharge, and DPR uses.

Construction activities related to groundwater recharge are anticipated to include improvements to existing spreading facilities, construction of new spreading facilities, installation of new injection wells, relocation of existing production wells, and installation of service connections and lateral pipelines to these facilities. Construction activities associated with service connections for industrial and DPR uses would include the installation of smaller distribution pipelines and ancillary facilities from the backbone and DPR pipelines.

Operational activities for these facilities would include releasing purified water into and maintaining spreading facilities; injecting purified water into groundwater basins; maintaining and operating injection and production wells; and inspecting, maintaining, and operating service connections and pipelines.

Planning for groundwater recharge facilities and service connections has not yet been completed. As a result, they will only be addressed at the program level in the current environmental review process and are not included in the analysis in this technical report.

1.2.4 Phasing

Construction and operation of Pure Water are expected to occur in two phases. To augment regional water supplies in the near term, an initial delivery component as part of Phase 1 is proposed to start construction in 2027 and be operational in 2033. During this initial delivery component, facilities to treat and pump up to 30 MGD at the Joint Treatment Site and approximately seven miles of the backbone pipeline through the City of Carson would be simultaneously constructed. Construction of this portion of the backbone pipeline would enable service connections to deliver purified water for industrial and groundwater recharge uses.

Upon completion of the initial delivery component, construction of Phase 1 would continue at the AWP Facility to produce approximately 115 MGD of purified water, and ongoing construction of the backbone pipeline and associated pump stations would also be completed. Phase 1 is anticipated to be complete by 2035.

Phase 2 would involve expansion of the AWP Facility to purify up to a total of 150 MGD. Phase 2 also would include construction of DPR treatment facilities at the AWP Facility, at a satellite DPR site, or at one or more WTPs, as well as the DPR pipeline that extends eastward from the backbone pipeline. Although the timing of this phase is uncertain, it is expected that construction would start in 2035, and that Pure Water would be complete and fully operational in 2040.

1.3 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

1.3.1 Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

1.3.2 Terminology

1.3.2.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

1.3.2.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

1.3.2.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this wide range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 mPa.

Because decibels are logarithmic units, SPL cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile produces an SPL of 70 dBA when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1 dBA changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hz to 8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dBA are generally not perceptible. It is widely accepted, however, that people begin to detect sound level increases of 3 dBA in typical noisy environments. Further, a 5-dBA increase is generally perceived as a distinctly noticeable increase, and a 10-dBA increase is generally perceived as a doubling of loudness.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3 dBA change in noise, which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear.

1.4 REGULATORY FRAMEWORK

1.4.1 California Noise Control Act

The California Noise Control Act is a section within the California Health and Safety Code that describes excessive noise as a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

1.4.2 Local Regulations

The Proposed Project would be located within multiple jurisdictions, each with its own regulations related to construction and/or operational noise. Typically, a jurisdiction's municipal code regulates noise generation while the General Plan regulates land use compatibility related to noise. The Joint Treatment Site would be located entirely within the City of Carson. The backbone pipeline would be constructed in 15 separate cities and within the unincorporated County of Los Angeles.

Local agency planning documents and noise ordinances are often referenced as the basis for thresholds to analyze potential impacts to noise-sensitive land uses (NSLUs) from construction and operation of a project. According to Section 53091(d) of the California Government Code, building ordinances of a county or city do not apply to the location or construction of facilities for the production, generation, storage, treatment or transmission of water or wastewater. Section (e) of the code states that zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water.

1.4.2.1 City of Azusa

City of Azusa Municipal Code (Section 88.31.020, Noise Standards)

No use, activity, or process within the City shall generate noise in excess of the levels identified by **Table 1** and **Table 2** as measured at the property line of a NSLU identified in **Tables 1** and **2**. If the measured ambient noise level exceeds the applicable noise level standard in any category shown in **Table 1**, the applicable standards shall be adjusted to equal the ambient noise level. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped to allow measurement of the ambient noise level, the noise level measured while the source is in operation shall be compared directly to the applicable noise level standards identified in **Table 1**.

Table 1
AZUSA MAXIMUM ALLOWABLE NOISE LEVEL BY RECEIVING LAND USE

Noise Sensitive Land Use	Outdoor Activity Areas[1, 2] dBA L_{DN}	Interior Spaces dBA L_{DN}	Interior Spaces dBA L_{EQ}
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Extended Care	65	45	-
Theater, Auditorium	-[3]	45	35
Meeting Facility, public or private	65	45	40
Offices	65	45	45
School, Library, Museum	65	45	45
Playground, Park	70	-	-

Source: Azusa Municipal Code Section 88.31.020 Table 3-3

1 Where the location of the outdoor activity is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

2 Where it is not possible to reduce noise in outdoor activity areas to 65 dB L_{DN}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB L_{DN}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

3 Subject to an acoustical analysis in compliance with Section 88.31.020.C.2.

dBA = A-weighted decibels; L_{DN} = day-night level; L_{EQ} = one-hour equivalent sound level

Table 2
AZUSA SHORT-DURATION EVENTS NEAR RESIDENTIAL AREAS

Sound Level	Maximum Allowable Sound Level[1]	
	Day/Evening dB (7:00 a.m. to 10:00 p.m.)	Night dB (10:00 p.m. to 7:00 a.m.)
Hourly L_{EQ} dB	50	45
Maximum Level, dB	70	65
Maximum Level, dB, for Impulsive Noise	65	60

Source: Azusa Municipal Code Section 88.31.020 Table 3-4

[1] If the offensive noise contains a steady, audible tone (e.g., a screech or hum), is a repetitive noise (e.g., hammering), or contains speech or music, the maximum allowable sound level shall be reduced by 5 dB.

dB = decibels; L_{EQ} = one-hour equivalent sound level

Construction is generally allowed between 7:00 a.m. and 6:00 p.m. Monday through Saturday. Extended hours may be allowed through conditions of approval from the city between 6:00 p.m. and 10:00 p.m. Monday through Saturday and between 9:00 a.m. and 5:00 p.m. on Sundays.

City of Azusa General Plan, Chapter 5: Natural Environment

The City of Azusa General Plan Policies 1.1 and 1.2 require the consideration of noise in the placement of new projects. Implementation Program N12 requires institutional developments to complete an acoustical analysis if they adjoin a residential zone (Azusa, City of 2004).

1.4.2.2 City of Baldwin Park

City of Baldwin Park Municipal Code (Chapter 130, General Offenses, and Section 153.140.070, Noise)

No person within the City may make, cause, or allow to be produced noise which is received on property occupied by another person within the designated zone, in excess of the levels presented in **Table 3** except as expressly provided otherwise in the Municipal Code. At the boundary line between a residential property and a commercial or manufacturing property, the noise level of the quieter zone shall be used.

Table 3
BALDWIN PARK AMBIENT BASE NOISE LEVEL STANDARDS

Zone	Maximum Allowable Sound Level	
	Day 7:00 a.m. to 10:00 p.m. (dBA)	Night 10:00 p.m. to 7:00 a.m. (dBA)
R-I	55	45
RG and R-3	60	55
Commercial	65	60
Industrial	70	70

Source: Baldwin Park Municipal Code Section 130.34

dBA = A-weighted decibels

R-1 = single-family residential; RG and R-3 = multi-family residential

The limits presented in **Table 3** may be adjusted based on the following specific noise conditions. Repetitive, impulsive noise of pure tones and sound with cyclically varying amplitude or steady whines, screeches, or hums, shall have a limit of 5 dBA less than the applicable value in **Table 3**. Noise occurring more than 5 but less than 15 minutes per hour is permitted to exceed the applicable limit by 2 dBA. Noise occurring for more than one but less than five minutes per hour may exceed the applicable limit by 5 dBA. Lastly, noise occurring for less than one minute per hour may exceed the limit by 7 dBA.

No construction, reconstruction, or demolition within the City of Baldwin Park is permitted, except between the hours of 7:00 a.m. and 7:00 p.m.

City of Baldwin Park 2020 General Plan, Noise Element

The City of Baldwin Park's 2020 General Plan Noise Element adopts the interior and exterior standards of the state and Policy 1.1 requires these standards to be used during the planning process. Operational impacts related to non-transportation noise are to be addressed during the design review and CEQA processes, which shall require an acoustical analysis where a project would generate noise affecting a sensitive receptor (Baldwin Park, City of 2002).

1.4.2.3 City of Bellflower

City of Bellflower Municipal Code (Section 8.32.010, Unnecessary Noises, and Section 15.04.040, Administrative Provisions)

It is unlawful for any person within any zone of the City to use or operate any machine or device for the producing, reproducing, or amplification of any sound, in such a manner as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area. Any unreasonable noise level caused by such use or operation which is audible to the human ear at a distance in excess of 200 feet from the property line of a noise source, which is within any residential area or zone of the City or within 500 feet of any residential zone, shall be a violation of the provisions of this chapter. Notwithstanding any other provisions of the Municipal Code, it is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

Construction is permitted between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 8:00 a.m. and 6:00 p.m. on Saturdays. No construction activities may commence outside of these hours within the City of Bellflower except as otherwise approved by the Building Official.

City of Bellflower General Plan, Noise Element

The City of Bellflower's General Plan Noise Element Policy 1.4 limits construction activities adjacent to residential land uses to the hours of 7:00 a.m. to 8:00 p.m. Monday through Saturday. Policy 1.5 states that construction activities must also incorporate feasible and practical mitigation techniques to reduce noise impacts on adjacent areas (Bellflower, City of 1994).

1.4.2.4 City of Carson

City of Carson Municipal Code (Article V Chapter 5, Noise Control Ordinance)

The City of Carson has adopted the Los Angeles County Noise Control Ordinance (see Section 1.4.2.16 of this report, below) except as amended by Municipal Code Section 5502. The modifications include amending the definition of short-term construction to mean 20 days or fewer. **Table 4** shows the construction noise restrictions for the City of Carson, as modified by Municipal Code Section 5502.

Table 4
CARSON CONSTRUCTION NOISE RESTRICTIONS AT AFFECTED STRUCTURES

	Single-Family Residential (dBA)	Multi-Family Residential (dBA)	Semi-residential/ Commercial (dBA)
Mobile Equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75	80	85
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60	64	70
Stationary Equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	65	70	70
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	55	60	60

Source: City of Carson Noise Control Ordinance Section 5502
dBA = A-weighted decibels

Furthermore, for operational noise, if ambient noise levels exceed the applicable noise levels identified by the County of Los Angeles's Exterior Noise Standards, additional standards are provided (see Section 1.4.2.16 of this report, below).

Carson General Plan, Noise Element

The City of Carson completed their General Plan in 2023 (Carson, City of 2023). The General Plan provides guiding policies and implementing policies to focus on high-level methods of reducing noise. Guiding Policy NO-G-2 aims to incorporate noise considerations into land use planning decisions and guide the location and design of noise-generating facilities to minimize their effects on adjacent land uses. Guiding Policy NO-G-3 aims to reduce noise impacts along major freeways and roadways, while Implementing Policy NO-P-1 seeks to limit new NSLUs where existing noise levels are elevated. Implementing Policies NO-P-2 and NO-P-3 require certain new projects to incorporate noise-attenuating features into site planning and design.

1.4.2.5 City of Cerritos

City of Cerritos Municipal Code (Section 22.80.480, Noise)

No noise shall be generated which causes the maximum sound level at surrounding property lines to exceed the ambient noise by five dBA, or the following limits for the applicable receiving land use, whichever is greater. The noise limits are 50 dBA for residential and agricultural properties, 60 dBA for commercial properties, and 70 dBA for industrial properties. These limits are decreased by five dBA for

steady tones. During the daytime hours (7:00 a.m. to 7:00 p.m.) in non-residential areas the limits may be increased by 5 dBA for noises occurring no more than 15 minutes per hour, by 10 dBA for noises occurring no more than 5 minutes per hour, and by 15 dBA for noises occurring no more than 1 minute per hour.

These noise limits are not applicable to the use of equipment for maintenance or building construction, for which a valid building permit has been issued, between the hours of 7:00 a.m. and 7:00 p.m.

City of Cerritos General Plan, Chapter 10 Noise Element

General Plan Policy N-2.3 requires noise mitigation techniques to be incorporated into construction activities. General Plan Policies N-3.1 through N-3.4 apply to the planning process and require consideration of noise policies established by the municipal code and state, incorporation of noise reduction measures as necessary, and consideration of non-residential use proposed near residential uses (Cerritos, City of 2004).

1.4.2.6 City of Downey

City of Downey Municipal Code (Section 4606, Noise Regulations)

Noise levels from any noise source not operating on a public right-of-way to another property boundary are considered a public nuisance when such noise level exceeds 5 dBA above the ambient noise level. During daytime hours (7:00 a.m. to 10:00 p.m.), the ambient noise levels may be increased by 5 dBA for a source operated for 12 minutes per hour or less, by 10 dBA for a source operated for 3 minutes per hour or less, and by 15 dBA for a source operated for 12 minutes per hour or less. The level may be decreased by five dBA for an impulsive sound or pure tone. If the noise source is of a continuous nature and cannot be reasonably removed to assess the ambient noise level of a given land use, noise levels shall not be greater than the ambient noise levels described in **Table 5**.

Table 5
DOWNEY NOISE LEVEL LIMITS

Land Use	7:00 a.m. to 10:00 p.m. (dBA)	10:00 p.m. to 7:00 a.m. (dBA)
Residential	55	45
Commercial	65	
Manufacturing	70	

Source: Downey Municipal Code Section 46.6.3(b)
dBA = A-weighted decibels

Construction-related noise is permitted between the hours of 7:00 a.m. and 9:00 p.m. and shall not exceed 85 dBA as measured across a property line.

Vision 2025 General Plan, Chapter 6, Noise Element

In accordance with Program 6.3.1.9, construction activities generating the most noise should be concentrated within the midday hours to minimize impacts to nearby residents (Downey, City of 2005).

1.4.2.7 City of Duarte

City of Duarte Municipal Code (Chapter 9.68, Noise Regulations)

It is unlawful for any person within the City of Duarte to make, cause, or allow to be produced noise which is received on property occupied by another person within the designated zone, in excess of the levels specified in **Table 6**.

Table 6
DUARTE NOISE STANDARDS

Zone	7:00 a.m. to 9:00 p.m. (dBA)	9:00 p.m. to 7:00 a.m. (dBA)
R-1 and R-2	55	45
R-3 and R-4	55	50
Commercial	60	55
Industrial and Light Manufacturing	70	70

Source: Irwindale Municipal Code Section 9.28.030.A
dBA = A-weighted decibels

Construction noise is prohibited within a residential zone, or within a radius of 500 feet therefrom, between the hours of 10:00 p.m. and 7:00 a.m.

City of Duarte General Plan

The Noise Element of the City of Duarte General Plan includes goals, objectives, and policies related to reducing noise from both transportation and non-transportation noise sources and to land use compatibility. Policy Noise 1.1.5 specifies that construction, delivery, and through truck traffic should be limited to designated routes. Policy Noise 2.1.4 specifies that significant noise generating activities should be prohibited from being located adjacent to residential neighborhoods and near schools (Duarte, City of 2007).

1.4.2.8 City of Industry

There are no provisions of the City of Industry's Municipal Code that regulate noise related to construction or operation of public facilities or infrastructure. As there are few NSLUs in the City of Industry, the General Plan does not include many policies related to noise generation or compatibility. Policy S6-2 requires enforcement of state noise standards and consideration of NSLUs consistent with state land use compatibility guidelines (Industry, City of 2014).

1.4.2.9 City of Irwindale

City of Irwindale Municipal Code (Chapter 9.28, Noise Regulation)

A violation of the Municipal Code would occur if any noise exceeds the ambient or the ambient base level in **Table 7**, whichever is greater, by more than 10 dB when measured at any boundary line of the property from which the noise emanates.

Table 7
IRWINDALE AMBIENT BASE NOISE LEVEL

Zone	10:00 p.m. to 7:00 a.m. (dBA)	7:00 a.m. to 10:00 p.m. (dBA)
Residential	45	50
Commercial	50	55
Industrial	60	70

Source: Irwindale Municipal Code Section 9.28.030.A
dBA = A-weighted decibels

Construction noise is not subject to the levels above when the building inspector has authorized a permit for construction. Permitted construction is limited to the hours between 7:00 a.m. and 7:00 p.m.

City of Irwindale General Plan Update

Noise is addressed in the Public Safety Element of the General Plan (Section 6). The General Plan relies on state regulations related to noise and land use compatibility. Safety Element Policy 5 states that the City of Irwindale will reduce noise exposure by incorporating noise and land use compatibility considerations into the planning process (Irwindale, City of 2008).

1.4.2.10 City of Lakewood

City of Lakewood Municipal Code (Section 9376, Air Conditioners, Mechanical Equipment and Machinery Noise in Residential Areas, and Section 8019, Permitted Hours of Construction)

Mechanical equipment may not cause the noise level at the property line of any property zoned for residential uses to exceed the permitted SPL by more than five dBA. At the property line of an affected residential property the permitted SPL is 60 dBA (i.e., equipment may not cause noise at a residential property line to exceed 65 dBA). Mechanical equipment shall also not be installed within a residential zone unless it is determined by the Director of Community Development that the installation of such equipment would not interfere with the residential land use.

Construction activities that may disturb persons occupying sleeping quarters in any place or residence are prohibited except from 7:00 a.m. to 7:00 p.m. Monday through Saturday and 9:00 a.m. to 7:00 p.m. on Sundays. Activities occurring more than 500 feet from a residential zone in any jurisdiction are exempt from these restrictions pursuant to Section 8020. An exemption may also be granted by the Director of Community Development.

The City of Lakewood Comprehensive General Plan, Chapter 6, Noise

No noise-related policies applicable to the Proposed Project are included in the General Plan (Lakewood, City of 1996).

1.4.2.11 City of Long Beach

City of Long Beach Municipal Code (Chapter 8.80, Noise)

The noise standards for the various land use districts in the City of Long Beach (see Municipal Code Section 8.80.160) are presented in **Table 8**. No person shall operate or cause to be operated any source

of sound at any location, which causes the noise level when measured from any other property, either incorporated or unincorporated, to exceed the noise standard for that land use district for a cumulative period of more than 30 minutes in any hour; the noise standard plus 5 dB for a cumulative period of more than 15 minutes in any hour; the noise standard plus 10 dB for a cumulative period of more than 5 minutes in any hour; the noise standard plus 15 dB for a cumulative period of more than 1 minute in any hour; or the noise standard plus 20 dB or the maximum measured ambient, for any period of time. If these standards are exceeded by ambient noise levels, the allowable noise exposure standard shall be increased 5 dB increments in each category as appropriate to reflect the ambient noise level. If the noise source is a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the standard limits shall be reduced by 5 dB.

Table 8
LONG BEACH EXTERIOR NOISE LIMITS

Receiving Land Use District	Night: 10:00 p.m. to 7:00 a.m. (dBA)	Day: 7:00 a.m. to 10:00 p.m. (dBA)
District One (predominantly residential)	45	50
District Two (predominantly commercial)	55	60
District Three (predominantly industrial)	65	
District Four (predominantly industrial)	70	

Source: Long Beach Municipal Code Section 8.80.160 Table A
dBA = A-weighted decibels

The interior noise standards for various land use districts, presented in **Table 9** apply within structures of each land use type with windows in their normal seasonal configuration. These limits shall not be exceeded for more than five cumulative minutes a given hour. The limit increases by 5 dB for a period of one minute in the hour and increases by 10 dB for a maximum measured sound. If the measured indoor ambient level exceeds the permissible noise limit category, the allowable noise exposure standard shall be increased in 5 dB increments in each category as appropriate to reflect the indoor ambient noise level.

Table 9
LONG BEACH INTERIOR NOISE LIMITS

Receiving Land Use	Night: 10:00 p.m. to 7:00 a.m. (dBA)	Day: 7:00 a.m. to 10:00 p.m. (dBA)
Residential	35	45
School (while in session)	-	45
Hospital, designated quiet zones, and noise sensitive zones	40	

Source: Long Beach Municipal Code Section 8.80.170 Table C
dBA = A-weighted decibels

Permitted construction shall not disturb a reasonable person of normal sensitivity between the hours of 7:00 p.m. and 7:00 a.m. on weekdays or holidays, between 7:00 p.m. on a Friday and 9:00 a.m. on a Saturday, or after 6:00 p.m. on a Saturday. Construction is not permitted on Sunday without special authorization.

Long Beach General Plan

The City of Long Beach updated their General Plan Noise Element in June 2023. The Noise Element contains policies to reduce noise related to construction, including policies for information and noticing to residents, as well as incorporation of best practices. Strategy 12 of the draft Noise Element includes a set of policies that aim to minimize construction noise and vibration levels in residential areas and other noise-sensitive uses where possible. Policy N 12-1 requires the reduction of noise at the source where possible. Policy N 12-5 outlines encouraged construction best practices such as use of lower noise-generating equipment, placement of staging areas away from NSLUs, and noticing for residences within 500 feet of a construction site. Compliance with Municipal Code requirements related to construction noise and hours would result in compliance with the other applicable policies related to construction noise. Other policies related to operational noise are recommended for evaluation by the draft Noise Element. If the responsible department determines these recommendations should be implemented, they may amend the Municipal Code or implement new programs (Long Beach, City of 2019).

1.4.2.12 City of Norwalk

City of Norwalk Municipal Code (Chapter 9.04 Article III, Noise)

Unless sound-level meter readings determine the ambient noise level in a given environment to be higher, the ambient noise levels in Norwalk are presumed to be as follows: 45 dBA in a residential zone during nighttime hours (10:00 p.m. to 7:00 a.m.), 55 dBA in a residential zone during daytime hours (7:00 a.m. to 10:00 p.m.), 60 dBA in a commercial zone at any hour, and 65 dBA in all other zones at all times. An average noise level reading which exceeds the ambient noise level at the property line of any residential land (or if a condominium or apartment, within any adjoining apartment) by more than 5 dBA is deemed to be evidence of a municipal code violation.

Construction activities may not occur outside of the hours between 7:00 a.m. and 6:00 p.m. or sunset, whichever is later. Exceptions may be granted by the Building Official or Director of Community Development in the case of urgent necessity in the interest of public health and safety under an emergency condition.

The City of Norwalk General Plan, Citywide Elements – Noise

Aside from compliance with state and federal policies, there are no policies in the Noise Element that are applicable to the Proposed Project (Norwalk, City of 1996).

1.4.2.13 City of Pico Rivera

City of Pico Rivera Municipal Code (Chapter 8.40, Noise)

No person shall make, cause, or permit to be made, upon any premises owned, occupied, or controlled by them, any unnecessary noises or sounds which are physically annoying to persons of ordinary sensitiveness, or which are so harsh or so prolonged or unnatural or unusual in their use, time, or place as to cause physical discomfort to the inhabitants of any neighborhood. The City of Pico Rivera's Municipal Code does not include regulations related to construction. Therefore, the General Plan policies apply to construction-related noise generation.

City of Pico Rivera General Plan, Chapter 11, Noise Element

General Plan Policy 11.3-1 limits construction activities within 500 feet of NSLUs to the hours of 7:00 a.m. to 7:00 p.m. and requires a noise mitigation plan be prepared for construction proposed near occupied NSLUs. Per Policy 11.1-4 new stationary noise sources must mitigate their impacts to NSLUs in accordance with the noise compatibility guidelines in **Table 10** (Pico Rivera, City of 2014).

Table 10
PICO RIVERA MAXIMUM ALLOWABLE ENVIRONMENTAL NOISE STANDARDS

Land Use	Exterior Noise Level from Property Line (L_{DN}/CNEL, dBA)	Interior Noise Level[1] (L_{DN}/CNEL, dBA)
Residential (Low Density, Multi Family, Mixed-Use)	65	45
Transient Lodging (Motels/Hotels)	65	45
Schools, Libraries, Churches, Hospitals/Medical Facilities, Nursing Homes, Museums	70	45
Theaters, Auditoriums	70	-
Playgrounds, Parks	75	-
Golf Courses, Ridings Stables, Water Recreation	75	-
Office Buildings: Business, Commercial, and Professional	70	-
Industrial, Manufacturing, and Utilities	75	-

Source: City of Pico Rivera 2014

[1] This noise exposure maximum requires window and doors to remain closed to achieve the acceptable interior noise level and will necessitate the use of an air conditioning unit and/or exterior noise level reduction measures such as a block wall and double pane windows.

L_{DN} = day-night level; CNEL = Community Noise Equivalent Level; dBA = A-weighted decibels

1.4.2.14 City of Santa Fe Springs

City of Santa Fe Springs Municipal Code

The noise level caused by any device, instrument, vehicle, machinery, operation, use, or activity shall not exceed the levels set forth in **Table 11**. In the event the ambient noise level exceeds the permitted noise level set forth in **Table 11**, the permissible noise level for the corresponding duration and receiving area shall be the ambient level. Noise of impulsive character or that contains a pure tone (such as a whine, screech, or hum), shall only be permitted at levels five dBA less than the permitted levels determined under this section. At a lot line separating properties with different permitted noise levels, the applicable permitted outdoor noise level shall be the arithmetic mean of the permitted outdoor noise levels.

Table 11
SANTA FE SPRINGS PERMITTED NOISE LEVELS

Receiving Area	Time of Day	Permitted Sound Level (dBA)				
		Maximum Cumulative Duration in One Hour (minutes)				Absolute Maximum
		30	15	5	1	
Any school, church, or hospital	Anytime	45	50	55	60	65
A-1, R-1, or R-3 Zone	7:00 a.m. to 10:00 p.m.	50	55	60	65	70
	10:00 p.m. to 7:00 a.m.	45	50	55	60	65
C-1 or C-4 Zone	7:00 a.m. to 10:00 p.m.	60	65	70	75	80
	10:00 p.m. to 7:00 a.m.	55	60	65	70	75
ML, PF, or BP Zone	Anytime	60	65	70	75	80
M-1 or M-2 Zone	Anytime	70	75	80	85	90
Building interior in the A-1, R-1, or R-3 Zone	Anytime	45	50	55	60	65

Source: Santa Fe Springs Municipal Code Section 155.424 (E)
dBA = A-weighted decibels
A-1 = Light Agricultural; R-1 = Single-Family Residential; R-3 = Multi-Family Residential; C-1 = Neighborhood Commercial; C-4 = Community Commercial; ML = Limited Manufacturing; M-1 = Light Manufacturing; M-2 = Heavy Manufacturing; PF = Public Use Facilities; BP = Buffer Parking

Construction within 500 feet of a residential zone may only occur between 7:00 a.m. and 7:00 p.m. Maintenance activities, other than emergency work, between 7:00 p.m. and 7:00 a.m. shall also be unlawful if the maintenance activity produces noise above the ambient level at any lot line of a property within a residential zone.

Santa Fe Springs 2040 General Plan, Noise Element

The City Council of Santa Fe Springs adopted the Santa Fe Springs 2040 General Plan on February 8, 2022. Policy N-3.3 requires applicants to develop construction management plans that provide noise mitigation and limit the hours of construction activity. Policy N-2.2 requires land use compatibility standards to be evaluated during development review in addition to municipal code compliance. Lastly, Policy N-2.3 would require applicants of projects that have the potential to generate noise to prepare an acoustical study (Santa Fe Springs, City of 2021).

1.4.2.15 City of Whittier

City of Whittier Municipal Code (Chapter 8.32, Noise Control)

Chapter 8.32, Noise Control, of the City of Whittier Municipal Code prohibits excessive or unreasonable noise, which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The Municipal Code does not specify numerical noise limits for construction or operations.

City of Whittier General Plan

Noise-related goals and policies are included in the Public Safety, Noise and Health Element of the City of Whittier General Plan (Whittier, City of 2021). Policy PSNH-10.8 specifies that industrial uses and trucking-related uses should be required to incorporate buffers that maintain acceptable noise levels for surrounding uses and areas.

1.4.2.16 County of Los Angeles

Los Angeles County Code (Chapter 12.08, Noise Control)

The County of Los Angeles provides multiple standards to assess noise exceedances. The exterior noise standards shown in **Table 12** are identified for designated noise zones.

Table 12
LOS ANGELES COUNTY EXTERIOR NOISE STANDARDS

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m.	45
		7:00 a.m. to 10:00 p.m.	50
III	Commercial properties	10:00 p.m. to 7:00 a.m.	55
		7:00 a.m. to 10:00 p.m.	60
IV	Industrial properties	Anytime	70

Source: Los Angeles County Code Section 12.08.390
dB = decibels

In addition, unless otherwise provided, no person shall operate or cause to be operated, any source of sound at any location within the unincorporated county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured on any other property either incorporated or unincorporated, to exceed any of the following exterior noise standards[1]:

- Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from **Table 12** of this section; or, if the ambient L50 exceeds the foregoing level, then the ambient L50 becomes the exterior noise level for Standard No. 1.

- Standard No. 2 shall be the exterior noise level, which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from **Table 12** of this section plus 5dB; or, if the ambient L25 exceeds the foregoing level, then the ambient L25 becomes the exterior noise level for Standard No. 2.

- Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level

[1] The statistical descriptor of a given sound level exceeded a given time measurement period is described as Ln. Ln refers to a sound level that is exceeded for n percent of a given time period. L50 describes the sound level exceeded for 50 percent of a given time period. L0 describes the sound level exceeded for zero percent of a given time period.

from **Table 12** of this section plus 20dB; or, if the ambient L8.3 exceeds the foregoing level, then the ambient L8.3 becomes exterior noise level for Standard No. 3.

- Standard No. 4 shall be the exterior noise level, which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from **Table 12** of this section plus 15dB; or, if the ambient L1.7 exceeds the foregoing level, then the ambient L1.7 becomes the exterior noise level for Standard No. 4.

- Standard No. 5 shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from **Table 12** of this section plus 20dB; or, if the ambient L0 exceeds the foregoing level then the ambient L0 becomes the exterior noise level for Standard No. 5.

Construction activities shall not generate noise that exceeds the maximum noise levels (L_{MAX}) at the affected residential buildings in **Table 13**. Mobile equipment standards apply to nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment. Stationary equipment standards apply to repetitively scheduled and relatively long-term operation (10 days or more) of stationary equipment. All mobile or stationary internal-combustion-engine powered equipment or machinery shall be equipped with suitable exhaust and air-intake silencers in proper working order.

Table 13
LOS ANGELES COUNTY NOISE RESTRICTIONS AT AFFECTED STRUCTURES

	Single-Family Residential (dBA)	Multi-Family Residential (dBA)	Semi-residential/ Commercial (dBA)
Mobile Equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75	80	85
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60	64	70
Stationary Equipment			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60	65	70
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50	55	60

Source: Los Angeles County Code Section 12.08.440
dBA = A-weighted decibels

At business structures, mobile equipment for nonscheduled, intermittent, short-term operation shall have a L_{MAX} for all hours, including Sunday and legal holidays, of 85 dBA. Construction activity is prohibited between the weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound creates a noise disturbance across a residential or commercial property line, except for emergency work of public service utilities or by variance issued by the health officer.

Los Angeles County General Plan, Chapter 11: Noise Element

Policy N 1.3 of the County of Los Angeles General Plan aims to reduce noise impacts to NSLUs by ensuring that site design, construction methods, and engineering controls such as barriers are implemented in accordance with the appropriate technologies. Policy N 1.5 requires that compliance with state and federal regulations is achieved (Los Angeles, County of 2015).

1.4.3 Nearby Jurisdictions

1.4.3.1 City of Los Angeles

Although the Proposed Project is not located within the City of Los Angeles, the Joint Treatment Site would be located adjacent to the boundary between the City of Carson and the City of Los Angeles. The City of Los Angeles jurisdiction begins south of Lomita Avenue, across the street from the Joint Treatment Site's southern boundary.

City of Los Angeles Municipal Code Chapter XI: Noise Regulation

Section 111.03, Minimum Ambient Noise Level describes ambient noise levels for various zones within the City of Los Angeles. For residential zones, the presumed ambient noise level is 50 dBA in the daytime and 40 dBA at nighttime.

Section 112.05, Maximum Noise Level of Powered Equipment or Powered Hand Tools, states that construction is restricted between the hours of 7:00 a.m. and 10:00 p.m. in residential zones or within 500 feet of residential zones. Noise levels from equipment are restricted to 75 dBA for most construction equipment, and 65 dBA for powered equipment intended for repetitive use, such as lawn mowers, leaf blowers, and small gardening tools.

2.0 ENVIRONMENTAL SETTING

2.1 EXISTING NOISE ENVIRONMENT

2.1.1 Joint Treatment Site

The Joint Treatment Site would be located in the City of Carson on land within the existing Warren Facility. The AWP Facility would be located northwest of the intersection of West Lomita Boulevard and South Main Street in the City of Carson (see **Figure 2**). To the south is a single-family residential neighborhood. To the east is a commercial retail center, two warehouses, and a commercial office park. Existing Warren Facility facilities are located to the west, and train tracks and industrial uses are located to the north. The noise environment surrounding the Joint Treatment Site consists primarily of vehicular traffic attributed to Lomita Boulevard and Main Street. The closest airport, Zamperini Field, is located approximately 3 miles to the west. Long Beach Airport is located approximately 6.5 miles to the east. The Joint Treatment Site is located well outside both airports' 65 dB CNEL contours and aircraft noise is not a primary noise source.

2.1.2 Backbone Alignment

The 39-mile backbone alignment spans Los Angeles County from the Joint Treatment Site in the City of Carson in the south to the San Gabriel Canyon Spreading Grounds in the City of Azusa to the north. Land uses along the alignment vary, and include residential, commercial, and industrial uses. In addition, the alignment is located along the San Gabriel River and Interstate (I-) 605. The primary noise sources along the backbone alignment vary, but generally include vehicular traffic, especially on local streets and from I-405, I-605, I-710, I-105, I-10, I-210, State Route (SR-) 91, and SR-60. The alignment would be located below ground through existing ROW, including within existing roadways and SCE easements.

2.1.3 Noise-Sensitive Land Uses

Noise-sensitive land uses are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. NSLUs in the vicinity of the Joint Treatment Site include single-family residences approximately 130 feet south of the AWP Facility site across West Lomita Drive and single-family residences adjacent to the north of the Workforce Training Center. Wilmington Middle School is located southwest of the Joint Treatment Site along East Lomita Boulevard, approximately 450 feet from the proposed AWP Facility's southeastern corner. Refer to **Figure 2** for nearby NSLUs. NSLUs in the vicinity of the backbone alignment include single and multi-family residential neighborhoods, schools, and hospitals.

2.1.4 Vibration-Sensitive Land Uses

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations are considered vibration sensitive (Federal Transit Administration [FTA] 2018). The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. Excessive levels of groundborne vibration of either a regular or intermittent nature can result in annoyance to land uses such as residences and buildings where people sleep such as hotels, hospitals, and dormitories. The closest vibration-sensitive land uses in the vicinity of the Joint Treatment Site would be the single-family residences south of West Lomita Boulevard and north of the Workforce Training Center. Vibration-sensitive land uses within the vicinity of the backbone alignment include single- and multi-family residential neighborhoods, schools, and hospitals.

2.1.5 Existing Noise Conditions

Site visits to the Joint Treatment Site and backbone alignment were conducted in April 2022, July 2022, August 2022, March 2023, March 2024, April 2024, and May 2024. Ambient noise was measured at multiple locations in the vicinity of Joint Treatment Site and along the backbone alignment. At the Joint Treatment Site, one short-term measurement was taken east of the site along the eastern edge of South Main Street. An additional short-term measurement was taken adjacent to nearby residences along West Lomita Boulevard, south of the proposed AWP Facility.

Long-term measurements were taken south of the site along West Lomita Boulevard, north of the site near the intersection of Main Street and West Sepulveda Boulevard, and two locations within the site itself (Veneklasen 2024; Appendix A). The long-term measurements in the vicinity of the Joint Treatment Site range in length from 24 hours to six days. The long-term measurements along the backbone alignment were primarily 24 hours. All measurements captured weekday noise levels. Sites were located to estimate noise at the Proposed Project sites and nearby sensitive receptors. Each long-term measurement was used to understand the 24-hour profile of the ambient noise levels in the vicinity of the Joint Treatment Site facilities. **Table 14** shows the daytime noise levels for all long-term measurement locations, including the locations surrounding the Joint Treatment Site facilities.

The long-term measurement locations are depicted in **Figures 3a through 3h**, and the short-term measurement locations are depicted in **Figures 4a through 4h**. As shown in the figures, daytime noise levels ranged from 65.0 to 76.9 dBA in the vicinity of the Joint Treatment Site and 50.6 to 79.4 dBA along

the backbone alignment. Nighttime noise levels ranged from 59.0 to 65.0 dBA in the vicinity of the Joint Treatment Site and 40.0 to 76.0 dBA along the backbone alignment. Noise levels vary depending on the time of day and proximity to nearby roadways and land uses.

Table 14
LONG-TERM NOISE LEVELS

Measurement Location	Daytime Noise Level[1]	Date[2]	Nearby Land Uses
LT01	76.9	March 3, 2022	Residential/Warren Facility
LT02	73.9	July 6, 2022	Residential/Industrial
LT03	75.5	July 6, 2022	Residential
LT04	70.9	July 6, 2022	Residential/Park
LT05	73.9	July 6, 2022	Residential
LT06	73.9	July 6, 2022	Residential/Park
LT07	75.5	March 2, 2023	Residential
LT08	76.7	March 2, 2023	Residential
LT09	76.3	March 2, 2023	Residential/Commercial
LT10	73.2	March 2, 2023	Residential
LT11	77.5	March 2, 2023	Residential
LT12	69.0	July 6, 2022	Residential
LT13	67.9	July 6, 2022	Residential
LT14	59.2	July 6, 2022	Residential
LT15	68.4	July 6, 2022	Commercial
LT16	64.3	July 6, 2022	Residential
LT17	70.6	August 18, 2022	Residential
LT18	71.0	August 18, 2022	Residential
LT19	69.8	August 18, 2022	Residential/Park
LT20	69.0	August 18, 2022	Commercial
LT21	75.5	August 18, 2022	Residential
LT22	65.5	August 18, 2022	Residential/Commercial
LT23	69.6	August 18, 2022	Residential
LT24	63.3	August 18, 2022	Open Space
LT25	65.8	August 18, 2022	Residential
LT26	59.8	August 18, 2022	Residential
LT27	70.4	August 19, 2022	Residential
LT28	56.1	August 12, 2022	Residential/School
LT29	63.8	March 3, 2023	Residential/Commercial
LT30	65.5	August 19, 2022	Residential
LT31	59.5	April 14, 2022	Residential
LT32	72.0[3]	April 30, 2024	Warren Facility
LT33	72.0[3]	April 30, 2024	Warren Facility
LT34	65.0[3]	April 30, 2024	Commercial

[1] Except when noted, based on the highest hourly noise level for each location.
[2] Based on the date when the measurement began.
[3] Average daytime noise level.

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 4/21/2025 -RK

Source: Base Map Layer (Esri)

HELIX Environmental Planning

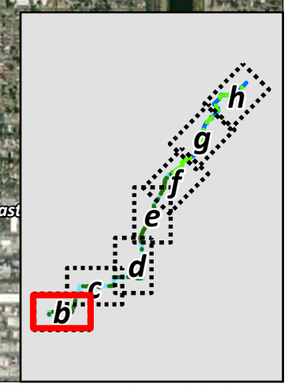
Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3a

Long-Term Measurement
Joint Treatment Site (Proposed)
Warren Facility (Existing)
Backbone Alignment
Open Trench (7" Diameter Pipe)
Trenchless (7" Diameter Pipe)

LT03 - 75.5 dBA
LT02 - 73.9 dBA
LT34 - 65.0 dBA
LT33 - 72.0 dBA
LT32 - 72.0 dBA
LT01 - 76.9 dBA

E Carson St
W 223rd St
E 223rd St
Interstate 405
San Diego Frwy
W Wardlow Rd
S Santa Fe Ave
Menlo Ave
Interstate 110
S Main St
S Avalon Blvd
S Wilmington Ave
Interstate 710
Long Beach Frwy
W Sepulveda Blvd
S Figueroa St
Normandie Ave
S Vermont Ave
Harbor Frwy
E Sepulveda Blvd
S Alameda St
Wilmington Ave
Avalon Blvd
Santa Fe Ave
W Willow St
E Lomita Blvd
Lomita Blvd
W Lomita Blvd
State Route 103
Terminal Island Frwy
Figueroa St
N Wilmington Blvd
N Avalon Blvd
Pacific Coast Hwy
Alameda St
State Route 1
W Pacific Coast
State Route 47



0 2,000 Feet

Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 4/21/2025 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3b

Long-Term Measurement

Backbone Alignment

Open Trench (7" Diameter Pipe)

Trenchless (7" Diameter Pipe)

LT09 - 76.3 dBA

LT08 - 76.7 dBA

LT07 - 75.5 dBA

LT06 - 73.9 dBA

LT05 - 73.9 dBA

LT04 - 70.9 dBA

LT03 - 75.5 dBA

N Paramount Blvd

E South St

South St

Del Amo Blvd

E Del Amo Blvd

W Del Amo Blvd

State Route 47

Long Beach Frwy

S Atlantic Ave

Interstate 710

N Long Beach Blvd

Cherry Ave

Paramount Blvd

S Wilmington Ave

S Santa Fe Ave

Carson St

E Carson St

S Alameda St

San Diego Frwy

Interstate 405

W Wardlow Rd

E 223rd St

Santa Fe Ave

0 2,000 Feet

N

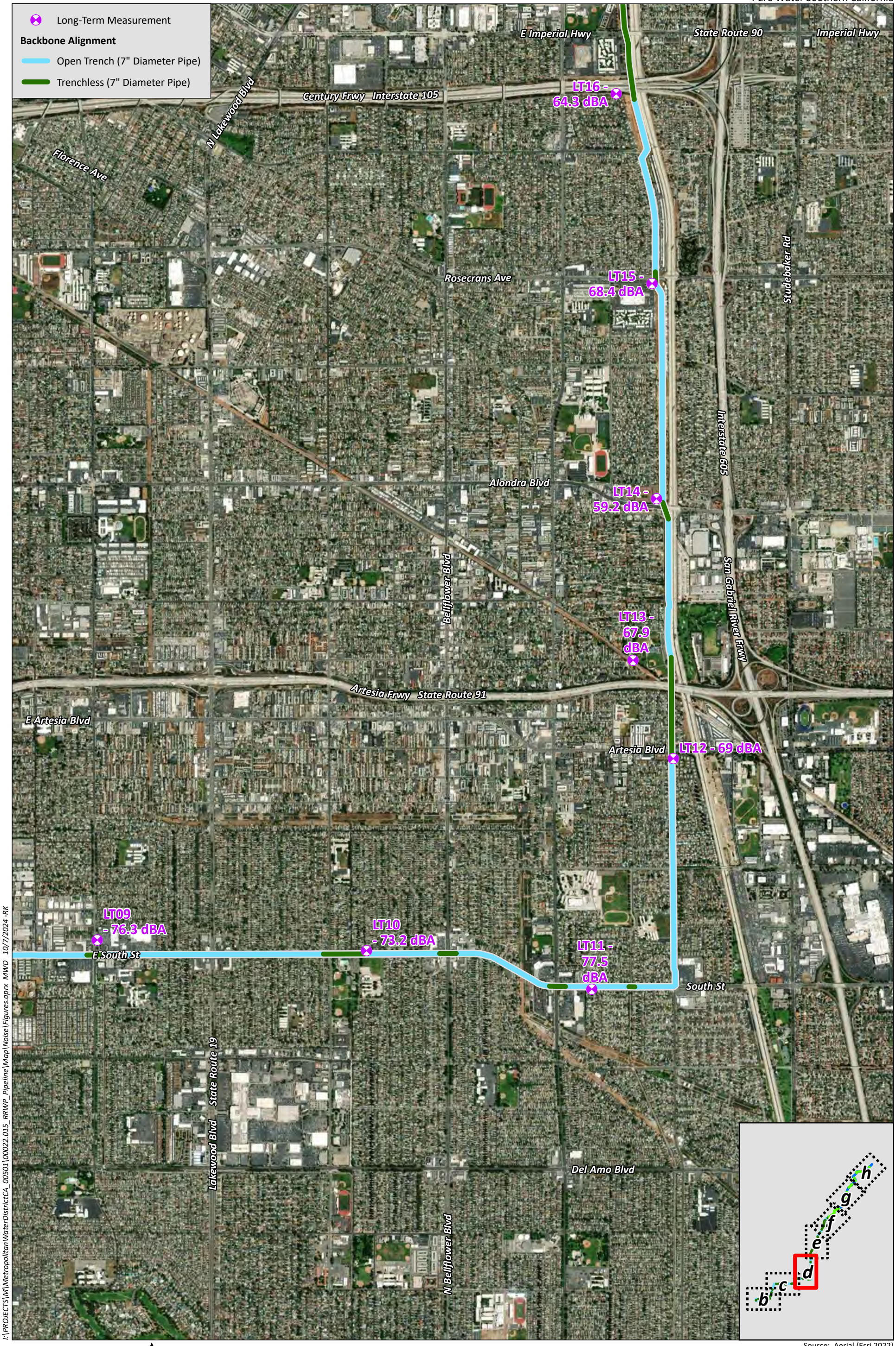
Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3c

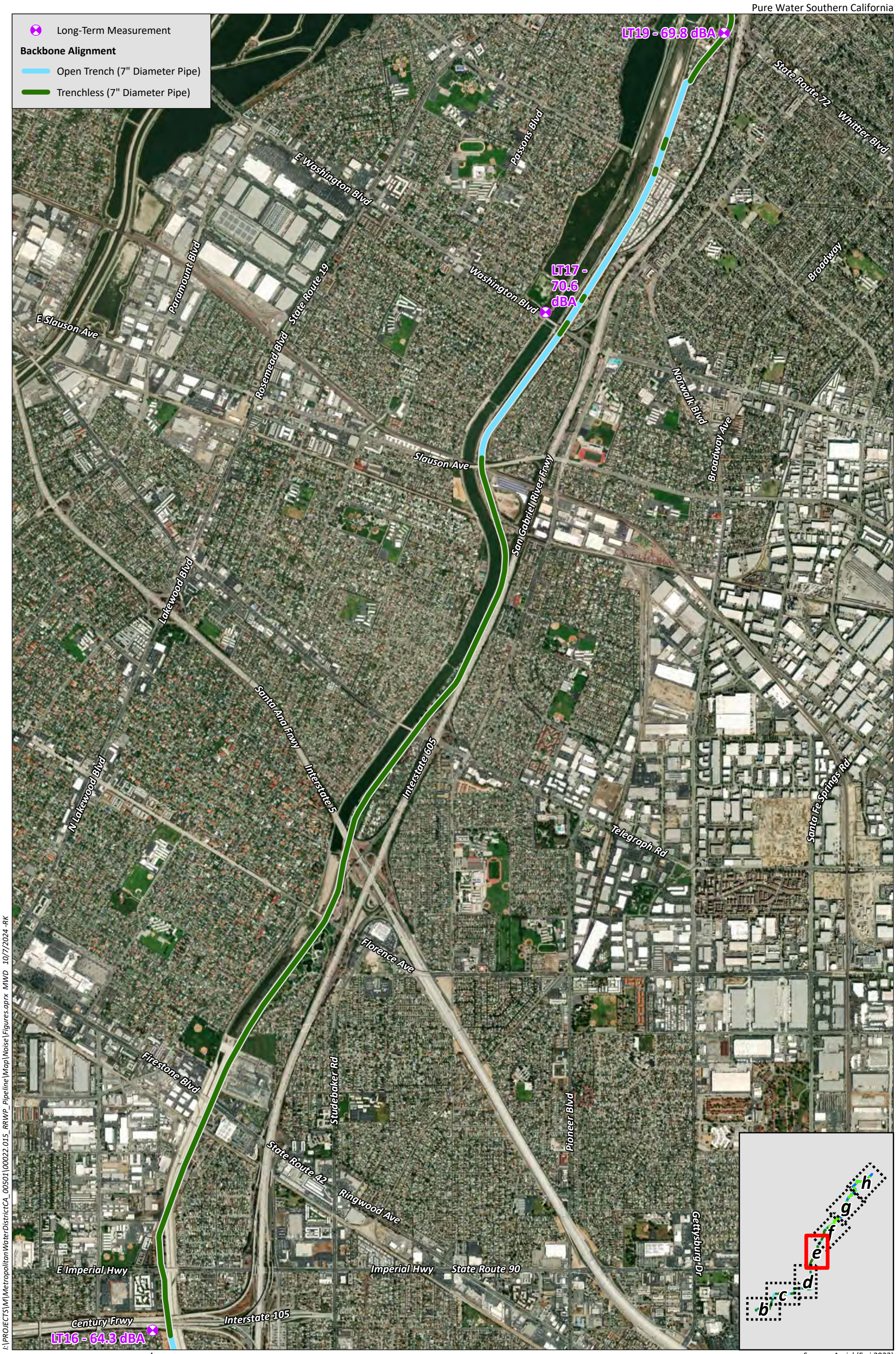


I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures\aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3d



Source: Aerial (Esri 2022)

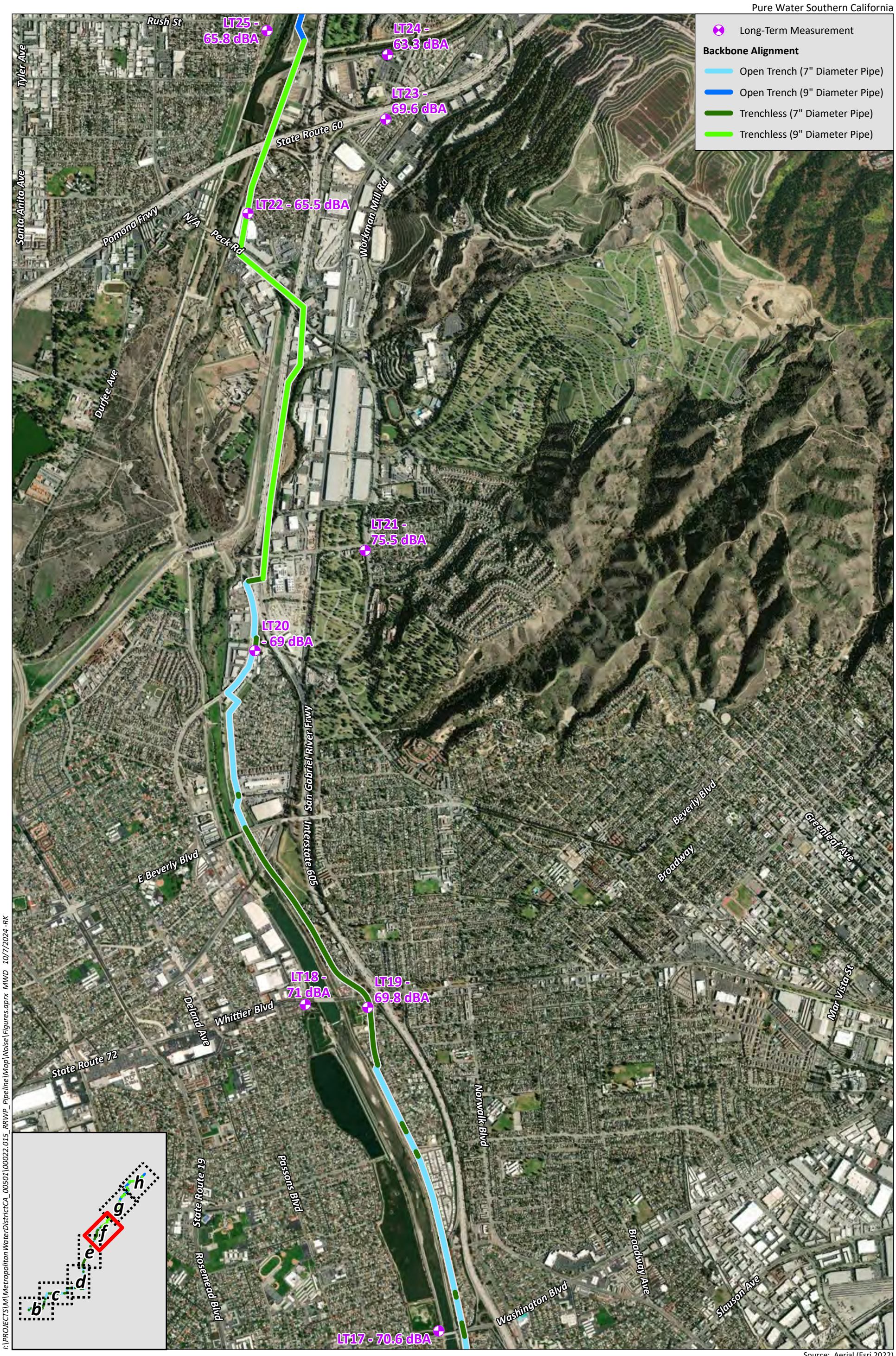
I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3e

Pure Water Southern California



I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

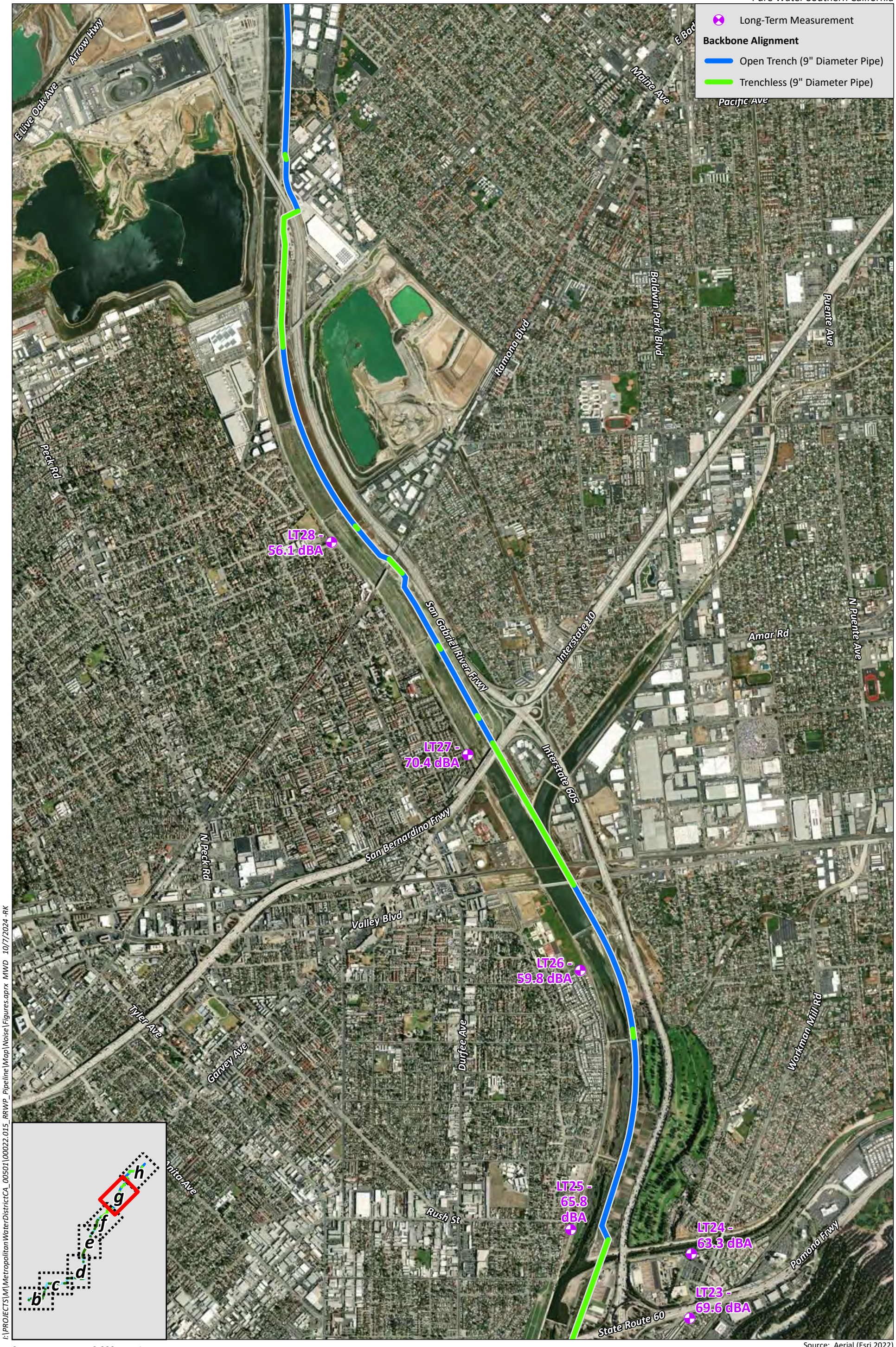
Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3f

Pure Water Southern California



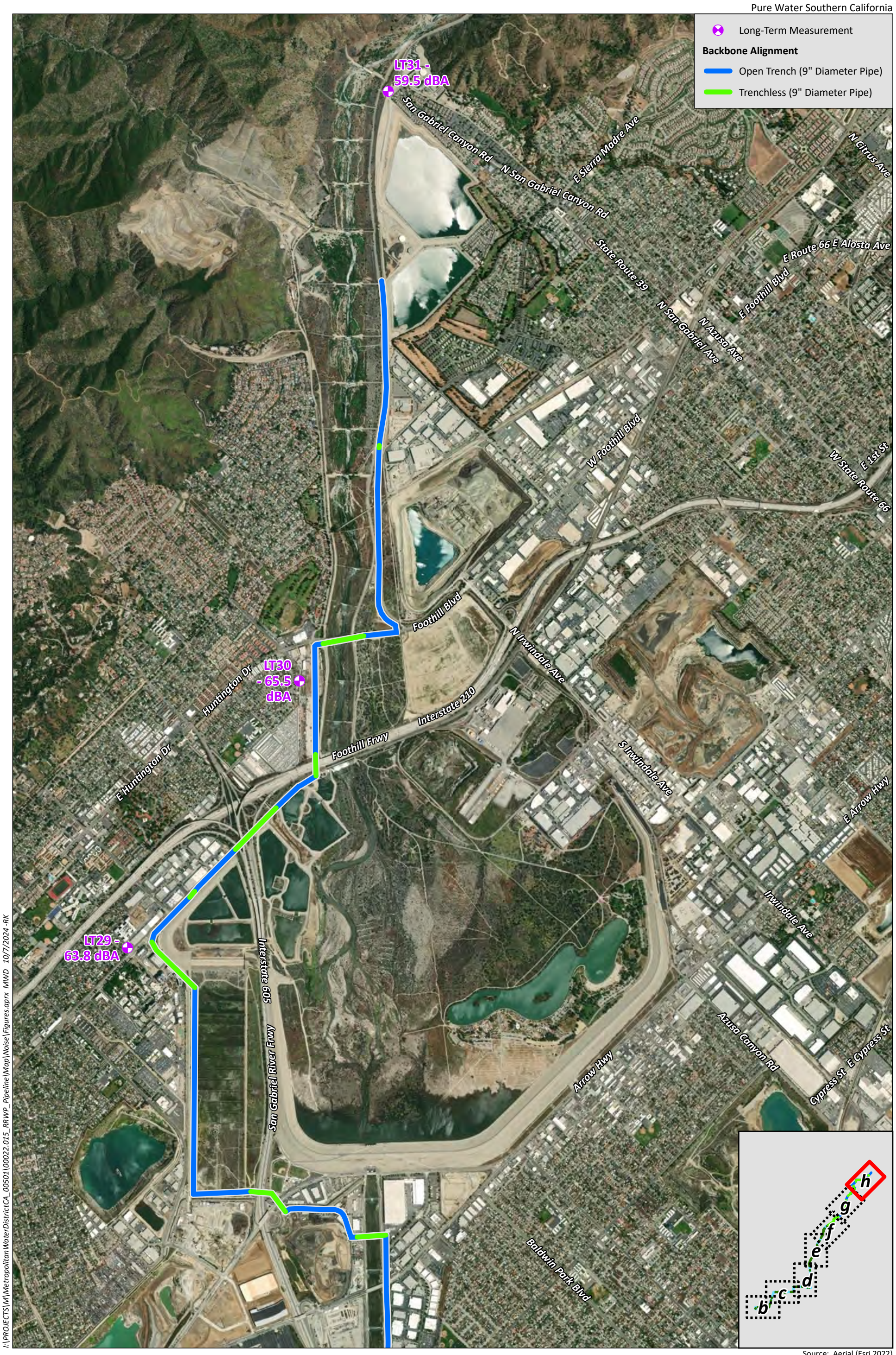
I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3g



I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

0 2,000 Feet

Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Long-Term Measurements

Figure 3h

Source: Base Map (Esri)

0 700 Feet

N

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4a

Pure Water Southern California

Short-Term Measurement
Joint Treatment Site (Proposed)
Warren Facility (Existing)
Backbone Alignment
Open Trench (7" Diameter Pipe)
Trenchless (7" Diameter Pipe)

ST01 - 71.2 dBA
ST02 - 72.5 dBA
ST03 - 67.4 dBA
ST04 - 72.4 dBA
ST05 - 64 dBA

W 223rd St
E 223rd St
Interstate 405
San Diego Frwy
W Wardlow Rd
S Santa Fe Ave
Sepulveda Blvd
W Sepulveda Blvd
S Western Ave
Normandie Ave
S Vermont Ave
Interstate 110 Harbor Frwy
S Figueroa St
S Main St
S Avalon Blvd
S Wilmington Ave
E Avalon Blvd
E Sepulveda Blvd
S Alameda St
W Willow St
Santa Fe Ave
W Lomita Blvd
Lomita Blvd
E Lomita Blvd
Western Ave
Figueroa St
N Wilmington Blvd
W Pacific Coast Hwy
N Avalon Blvd
Pacific Coast Hwy
Pch Hwy
Alameda St
State Route 1
Terminal Island Frwy
State Route 103
State Route 47
W Anaheim St
N Gaffey St
E Anaheim St

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 4/21/2025 -RK

0 2,000 Feet

N

Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4b

Short-Term Measurement

Backbone Alignment

Open Trench (7" Diameter Pipe)

Trenchless (7" Diameter Pipe)

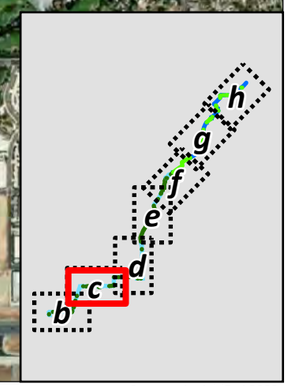
ST05 - 64 dBA

ST06 - 68.9 dBA

ST07 - 69.1 dBA

ST08 - 74 dBA

E Del Amo Blvd
W Del Amo Blvd
Del Amo Blvd
E South St
South St
E Carson St
Carson St
S Wilmington Ave
State Route 47
Long Beach Frwy
Interstate 710
S Santa Fe Ave
N Long Beach Blvd
S Atlantic Ave
N Paramount Blvd
Cherry Ave
Paramount Blvd
Lakewood Blvd
State Route 19
E 223rd St
S Alameda St
San Diego Frwy
Interstate 405
W Wardlow Rd
Santa Fe Ave



0 2,000 Feet

N

Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4c

Short-Term Measurement

Backbone Alignment

Open Trench (7" Diameter Pipe)

Trenchless (7" Diameter Pipe)

E Imperial Hwy
State Route 90
Imperial Hwy
N Lakewood Blvd
Century Frwy Interstate 105
Florence Ave
ST13 - 54.6 dBA
Rosecrans Ave
Studebaker Rd
ST12 - 50.7 dBA
Alondra Blvd
Interstate 605
ST11 - 50.6 dBA
Bellflower Blvd
San Gabriel River Frwy
Artesia Frwy State Route 91
E Artesia Blvd
Artesia Blvd
ST10 - 64.5 dBA
ST09 - 66.8 dBA
E South St
South St
State Route 19
Lakewood Blvd
Del Amo Blvd
N Bellflower Blvd

h
g
f
e
d
c
b

0 2,000 Feet

N

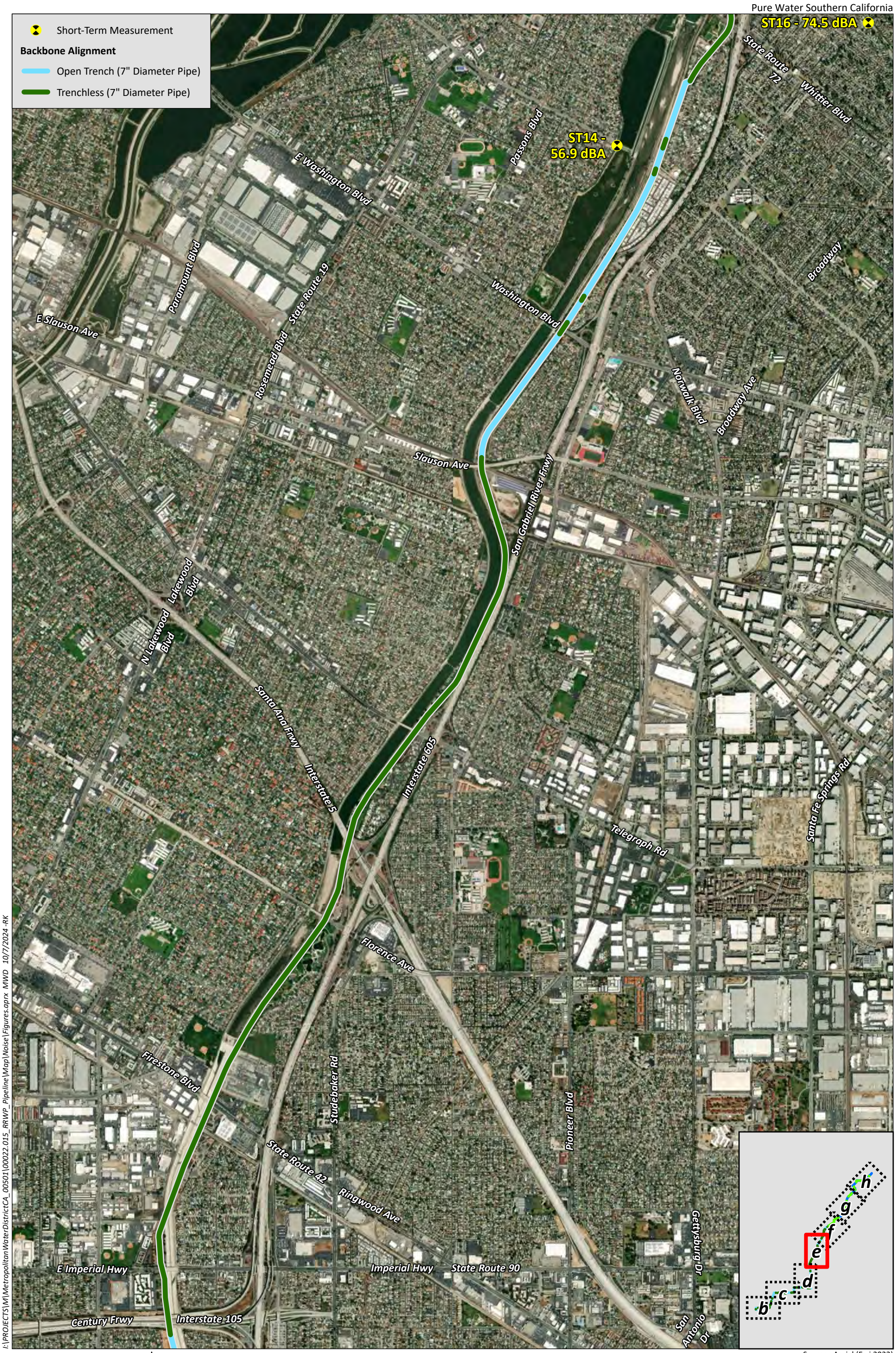
Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures\aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4d



I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4e

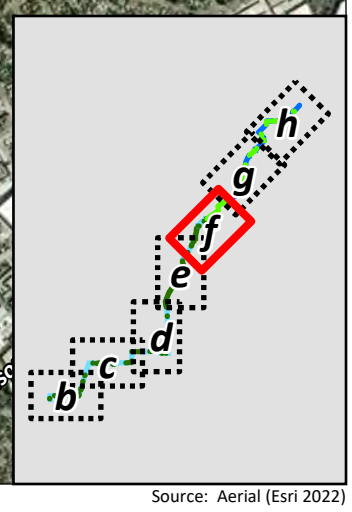
Short-Term Measurement

Backbone Alignment

- Open Trench (7" Diameter Pipe)
- Open Trench (9" Diameter Pipe)
- Trenchless (7" Diameter Pipe)
- Trenchless (9" Diameter Pipe)

ST21 - 79.4 dBA
ST20 - 68.4 dBA
ST19 - 62.2 dBA
ST18 - 53.8 dBA
ST17 - 73.3 dBA
ST16 - 74.5 dBA
ST15 - 61.8 dBA
ST14 - 56.9 dBA

State Route 60
Santa Anita Ave
Pomona Frwy
N/A
Peck Rd
Workman Mill Rd
Durfee Ave
S Workman Mill Rd
Beverly Blvd
Greenleaf Ave
E Beverly Blvd
Broadway
Interstate 605
Mar Vista St
Deland Ave
Whittier Blvd
San Gabriel River Frwy
Norwalk Blvd
State Route 72
Paramount Blvd
State Route 19
Passons Blvd
Rosemead Blvd
Washington Blvd
Broadway Ave



0 2,000 Feet

Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4f

Short-Term Measurement

Backbone Alignment

Open Trench (9" Diameter Pipe)

Trenchless (9" Diameter Pipe)

ST21 - 79.4 dBA

ST22 - 67.6 dBA

ST23 - 57.6 dBA

ST24 - 65.7 dBA

ST25 - 67.7 dBA

Santa Anita Ave
Tyler Ave
Garvey Ave
N Peck Rd
Peck Rd
E Live Oak Ave
Arrow Hwy
Valley Blvd
Rush St
Durfee Ave
San Gabriel River Frwy
Interstate 605
Ramona Blvd
Interstate 10
San Bernardino Frwy
Baldwin Park Blvd
State Route 60
Pomona Frwy
Workman Mill Rd
Amar Rd
Pacific Ave

0 2,000 Feet

Source: Aerial (Esri 2022)

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4g

Short-Term Measurement

Backbone Alignment

Open Trench (9" Diameter Pipe)

Trenchless (9" Diameter Pipe)

ST25 - 67.7 dBA

ST26 - 55.1 dBA

ST27 - 54.9 dBA

ST28 - 64 dBA

ST29 - 51.1 dBA

E Live Oak Ave

Huntington Dr

E Huntington Dr

San Gabriel River Frwy

Interstate 605

Foothill Frwy

Interstate 210

Foothill Blvd

Arrow Hwy

Baldwin Park Blvd

N Irwindale Ave

S Irwindale Ave

Irwindale Ave

Azusa Canyon Rd

Ramona Blvd

W Foothill Blvd

N San Gabriel Ave

N Azusa Ave

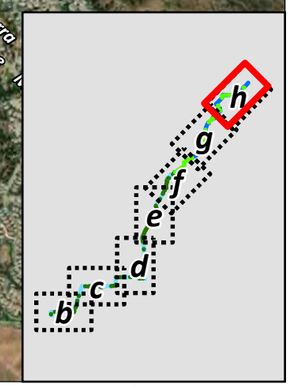
State Route 39

E Foothill Blvd

San Gabriel Canyon Rd

N San Gabriel Canyon Rd

W Sierra Madre Ave



0 2,000 Feet

N

Source: Aerial (Esri 2022)

I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 10/7/2024 -RK

HELIX Environmental Planning

Site Survey Noise Measurement Results - Short-Term Measurements

Figure 4h

3.0 ANALYSIS, METHODOLOGY, AND ASSUMPTIONS

3.1 METHODOLOGY

3.1.1 Ambient Noise Survey

The following equipment was used to measure existing noise levels near the Joint Treatment Site and along the backbone alignment:

- Larson Davis LxT Noise Meter
- Larson Davis 831 Noise Meter
- Piccolo II Noise Meters
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter

The sound level meters were field calibrated immediately prior to the noise measurements. All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.41983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

Veneklasen Associates, Inc., an acoustical consultant, conducted additional long-term ambient noise measurements. These acoustical measurements were conducted with Nti XL2 and Bruel and Kjaer 2250/2270 sound level meters, which conforms to the ANSI specifications S.14.2014 for Type 1 precision sound level meters (Veneklasen 2024; Appendix A).

3.1.2 Noise Modeling Software

Modeling of the exterior noise environment for this report was accomplished using a computer noise model: Computer Aided Noise Abatement (CadnaA) version 2023. CadnaA is a model-based computer program developed by *DataKustik* for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed model, and uses the most up-to-date calculation standards to predict outdoor noise impacts.

Project construction noise was also analyzed using the Roadway Construction Noise Model (RCNM; U.S. Department of Transportation 2008), which utilizes estimates of sound levels from standard construction equipment.

3.2 ASSUMPTIONS

3.2.1 Construction

3.2.1.1 Joint Treatment Site

Construction at the Joint Treatment Site would require the use of equipment throughout the site for the duration of construction. The primary noise-generating construction activities would include clearing, soils removal, excavation, above-grade construction, and paving. Construction equipment would include excavators, loaders, dump trucks, backhoes, rollers, graders, and cranes. Construction equipment would be located at varying locations across the Joint Treatment Site. Staging and storage would also occur on site. Nighttime construction within the Joint Treatment Site would generally be limited to activities that generate less noise and/or activities, such as concrete pouring, which may require cooler, nighttime temperatures.

3.2.1.2 Backbone Pipeline

Construction of the backbone pipeline would require multiple and varied pieces of construction equipment. The types of equipment used would vary depending on the construction activity along the alignment. Below are descriptions of the construction activities and equipment that are anticipated for each construction component.

Trenching

Trenching is anticipated to be the primary construction method used along the majority of the backbone alignment. The open trenching construction method involves excavation within existing roadways and easements, with the open-air trench used to accommodate the installation of the pipe. Excavated soils would either be stockpiled and backfilled/recompacted after the pipe is installed or hauled offsite for disposal. Trenching within easements would occur mostly in areas that are generally unpaved. Trenching within roadways and within easements would involve multiple construction equipment types including generators, cranes, concrete saws, dump trucks, air compressors, breakers, jackhammers, pavers, cement trucks, compactors, ventilation fans, loaders, dozers, backhoes, and excavators . Trenching would involve general mobilization and demobilization, site preparation, trench excavation, pipeline installation, and backfill.

Pipe Jacking

Pipe jacking would be used where the backbone pipeline would traverse beneath certain obstacles such as roadways or waterways. Pipe jacking involves the excavation of pits on each end of the obstacle which would be used to install the pipeline. Pipe jacking would involve the use of multiple equipment types, including cranes, loaders, dump trucks, generators, ventilation fans, and air compressors. Pipe jacking would involve general mobilization and demobilization, site preparation, shaft support, shaft excavation, pipeline installation, and backfill and shaft restoration.

Microtunneling

Microtunneling would be required for installing long stretches of pipeline where trenching cannot occur or beyond the capability or extent of pipe jacking under groundwater. Microtunneling would require the excavation of large shaft sites, into which tunneling equipment would be lowered. Much of the

equipment required for microtunneling would be below surface level, and would therefore not generate elevated noise levels above ground. Construction equipment used at the surface may include cranes, drill rigs, loaders, generators, air compressors, dump trucks, ventilation fans, and excavators. Microtunneling also would involve general mobilization and demobilization, site preparation, shaft support, shaft excavation, pipeline installation, backfill and shaft restoration.

Traditional Tunneling

Tunneling using traditional tunneling techniques would be required for long stretches of pipeline where trenching cannot occur or beyond the capability or extent of pipe jacking or microtunneling. Tunneling would require the excavation of a large pit, within which tunneling equipment would be lowered. Similar to microtunneling operations, much of the equipment required for the traditional tunneling activities would be below surface level and would therefore not generate significant elevated noise levels above ground. Construction equipment used at the surface may include cranes, loaders, generators, air compressors, welders, dump trucks, ventilation fans, and excavators. Tunneling also would involve general mobilization and demobilization, site preparation, shaft support, shaft excavation, pipeline installation, and backfill and shaft restoration.

Table 15 summarizes the key noise-generating construction equipment and activities for the backbone pipeline analyzed in this report. This list is not intended to be comprehensive of all equipment that may be used during construction. Additional equipment anticipated to be required for pipeline construction, but those that are not key noise-generating construction equipment, are not considered in this analysis. The list of equipment presented in this report is based on input from Metropolitan's engineering team.

Table 15
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Construction Activity	Equipment Types
Trenching	Generators, Cranes, Concrete Saws, Dump Trucks, Air Compressors, Breakers, Jackhammers, Pavers, Cement Trucks, Compactors, Ventilation Fans, Loaders, Dozers, Backhoes, Excavators
Pipe Jacking	Cranes, Loaders, Dump Trucks, Generators, Ventilation Fans, and Air Compressors
Microtunneling	Cranes, Drill Rigs, Loaders, Generators, Air Compressors, Dump Trucks, Ventilation Fans, and Excavators
Traditional Tunneling	Cranes, Loaders, Generators, Air Compressors, Dump Trucks, Ventilation Fans, and Excavators

Typical noise levels associated with these equipment types are shown in **Table 16.** Construction equipment is typically not used for the entirety of a given hour. **Table 16** also identifies anticipated hourly percentages as a basis for construction equipment noise modeling, which are standard percentages provided by the Federal Highway Administration's RCNM.

Table 16
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

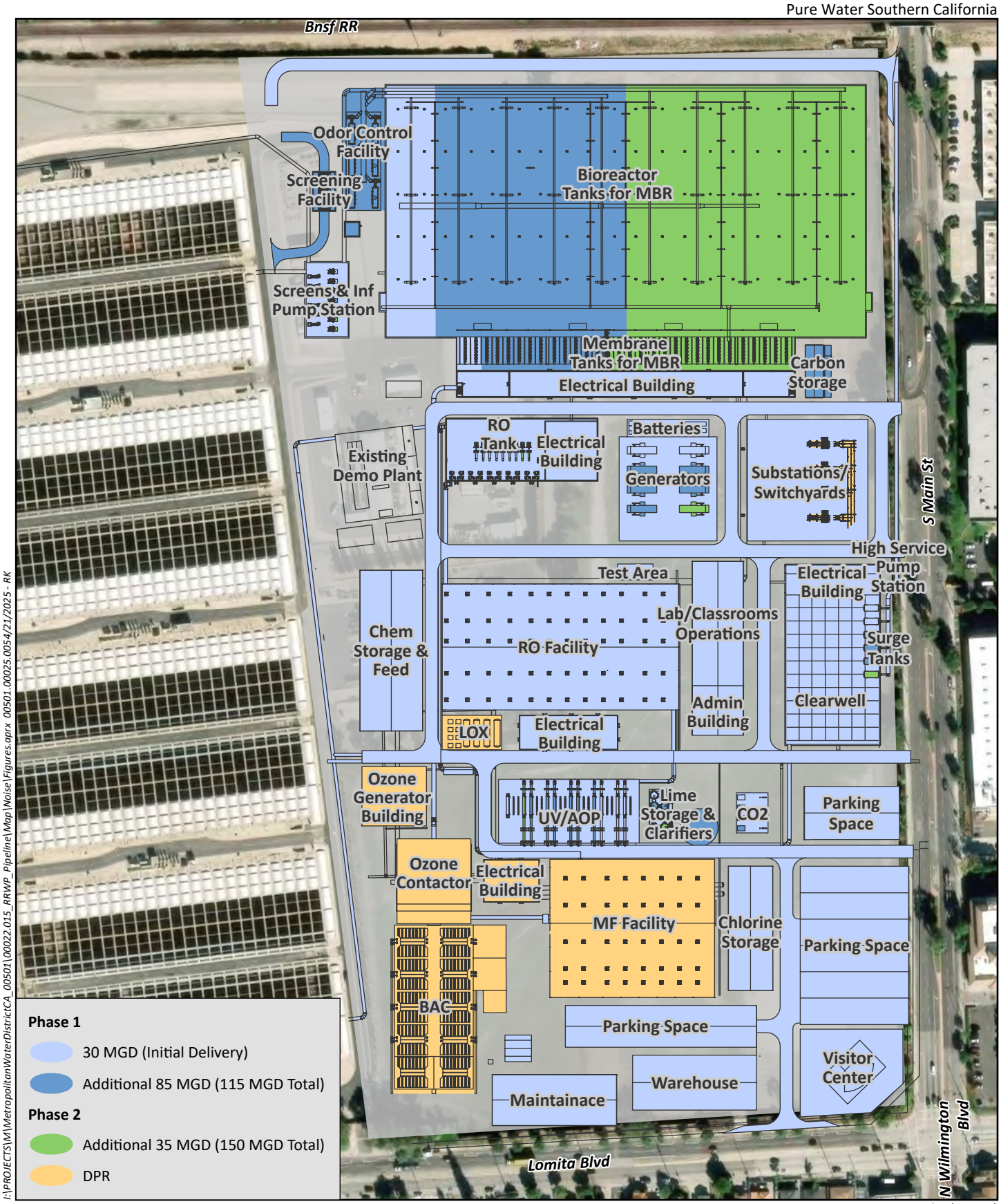
Typical Equipment	Percent Used per Hour	Reference Noise Level at 50 Feet (dBA L_{EQ})
Air Compressor	40	73.7
Backhoe	40	73.6
Breaker	10	80.0
Cement Truck	40	78.8
Compactor	10	66.6
Concrete Saw	20	82.6
Crane	16	63.4
Crawler Crane	16	67.4
Dozer	40	77.7
Drill Rig	20	72.1
Dump Truck	40	72.5
Excavator	40	79.4
Generator	100	66.4
Grader	40	81.0
Jackhammer	20	81.9
Loader	40	84.4
Roller	20	73.0
Paver	50	77.2
Ventilation Fan	100	69.4

3.2.2 Operations

3.2.2.1 Joint Treatment Site

The Joint Treatment Site would contain multiple noise-generating facilities throughout the site. The primary noise-generating facilities considered in this analysis include the sidestream centrate treatment facility, influent pump station, odor control facility, membrane bioreactor (MBR), ozone generator building, biologically activated carbon (BAC) facility, membrane filtration facility, reverse osmosis (RO) facility, and pump station. The configuration of these facilities within the overall Joint Treatment Site is shown in **Figure 5**. Facilities that would be located in open, unenclosed areas include the sidestream centrate treatment facility, influent pump station, odor control facility, membrane filtration facility, and RO facility. Facilities that would be enclosed within concrete buildings include the MBR mechanical room, ozone generator building, BAC facility, and pump station. Calculated noise levels assume operation of the following equipment:

- Blowers and pumps at the sidestream centrate treatment facility (unenclosed)
- Pumps at the influent pump station (unenclosed)
- Fans at the odor control facility (unenclosed)
- Blowers, pumps, and a compressed air system in the MBR mechanical room (enclosed)
- Generators at the ozone generator building (enclosed)
- Blowers and pumps at the BAC facility (enclosed)



I:\PROJECTS\W\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx 00501.00025.0054/21/2025 - RK

Source: Site Plan (Stantec)

0 250 Feet

HELIX Environmental Planning

AWP Facility Site Plan and Phasing

Figure 5

- Pumps and compressed air systems at the membrane filtration facility (unenclosed)
- Pumps and energy recovery devices at the RO facility (unenclosed)
- Pumps at the pump station (enclosed)

Calculated noise levels assumed that physical barriers would be present such as building enclosures (as described above) and an existing wall surrounding the site.

The specific site plan of the Workforce Training Center is not yet complete and therefore calculation of potential noise levels generated at specific NSLUs from Workforce Training Center-related operational noise, such as heating, ventilation, and air conditioning units or other equipment, is not provided herein.

3.2.2.2 Backbone Pipeline

Operational activities for the backbone pipeline would consist of dewatering, inspection, and maintenance activities for the pipeline itself, as well as minor grading of patrol roads and around access structures within the easement areas, primarily along the San Gabriel River. Regular patrolling would also occur along patrol roads for visual inspection of above-ground ancillary facilities and security purposes.

4.0 THRESHOLDS OF SIGNIFICANCE

The following thresholds of significance are based on Appendix G of the CEQA Guidelines and noise regulations of local jurisdictions.

4.1 THRESHOLD 1: INCREASE IN AMBIENT NOISE

Threshold 1: *Would the Proposed Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Proposed Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

4.1.1 Construction

As discussed in Section 1.4.2 of this report, as a regional public water purveyor and utility, Metropolitan is exempt from local zoning and building ordinances, through which noise standards and limitations typically are enforced (Government Code Section 53091). Nonetheless, for purposes of disclosure, this assessment analyzes potential noise impacts during construction of Pure Water.

Local agency planning documents and noise ordinances are often referenced as the basis for noise thresholds to analyze potential impacts to NSLUs from construction and operation of a project. However, for the purposes of this analysis, Metropolitan decided to establish a uniform construction noise impact threshold for the following two reasons. First, 13 of the 16 jurisdictions where the Proposed Project's facilities and components would be located have no specified numerical construction noise limits, and the City of Carson's noise thresholds are based on (and slightly less restrictive than) those from the County of Los Angeles. Second, there are significant advantages to utilizing a uniform noise impact threshold. Specifically, it allows such impacts to be addressed consistently and equitably

across multiple jurisdictions and facilitates future implementation of noise control measures during construction activities.

To provide context for establishment of a threshold, the General Plan Noise Element guidelines and local municipal code noise standards for each of the 16 jurisdictions traversed by the backbone alignment were reviewed. Section 1.4.2 of this report describes each jurisdiction's thresholds. **Table 17** provides a summary of these limits.

Table 17
SUMMARY OF LOCAL CONSTRUCTION NOISE REGULATIONS

Jurisdiction	Applicable Hours[1]	Applicable Construction Period[2]	Applicable Land Use	Temporary Noise Level Limit
County of Los Angeles/City of Carson[4]	7:00 a.m. to 8:00 p.m.	Short-term	Residential (single-family)	75 dBA L_{EQ} (12 hour)
			Residential (multi-family)	80 dBA L_{EQ} (12 hour)
			Semi-residential/Commercial	85 dBA L_{EQ} (12 hour)
		Long-term	Residential (single-family)	60 dBA L_{EQ} (12 hour)
			Residential (multi-family)	65 dBA L_{EQ} (12 hour)
			Semi-residential/Commercial	70 dBA L_{EQ} (12 hour)
	8:00 p.m. to 7:00 a.m.	Short-term	Residential (single-family)	60 dBA L_{EQ} (12 hour)
			Residential (multi-family)	64 dBA L_{EQ} (12 hour)
			Semi-residential/Commercial	70 dBA L_{EQ} (12 hour)
		Long-term	Residential (single-family)	50 dBA L_{EQ} (12 hour)
			Residential (multi-family)	55 dBA L_{EQ} (12 hour)
			Semi-residential/Commercial	60 dBA L_{EQ} (12 hour)
City of Azusa	7:00 a.m. to 6:00 p.m.	All	N/A	N/A
City of Baldwin Park	7:00 a.m. to 7:00 p.m.	All	N/A	N/A
City of Bellflower	7:00 a.m. to 6:00 p.m.	All	N/A	N/A
City of Cerritos	7:00 a.m. to 7:00 p.m.	All	N/A	N/A
City of Downey	7:00 a.m. to 9:00 p.m.	All	All	85 dBA L_{EQ} (1 hour)
City of Duarte	7:00 a.m.to 10:00 p.m.	All	500 feet of residential zone	N/A
City of Industry[3]	N/A	N/A	N/A	N/A
City of Irwindale	7:00 a.m. to 7:00 p.m.	All	N/A	N/A
City of Lakewood	7:00 a.m. to 7:00 p.m.	All	N/A	N/A
City of Long Beach	7:00 a.m. to 7:00 p.m.	All	N/A	N/A
City of Los Angeles[5]	9:00 p.m. to 7:00 a.m.	All	500 feet of residential zone	75 dBA L_{MAX} at 50 feet
City of Norwalk	7:00 a.m. to 6:00 p.m.	All	N/A	N/A
City of Pico Rivera	7:00 a.m. to 7:00 p.m.	All	500 feet of NSLU	N/A

Jurisdiction	Applicable Hours[1]	Applicable Construction Period[2]	Applicable Land Use	Temporary Noise Level Limit
City of Santa Fe Springs	7:00 a.m. to 7:00 p.m.	All	500 feet of NSLU	N/A
City of Whittier	7:00 a.m. to 6:00 p.m.	All	N/A	N/A

[1] Applicable hours indicate the hours when construction noise is not prohibited, per each jurisdiction's municipal code or General Plan, if applicable. Hours may vary by day of week and by holidays, depending on jurisdiction. Hours listed in this table apply to typical weekdays.

[2] Short-term is defined in the County of Los Angeles as a duration of 9 days or fewer. The City of Carson defines this period as 20 days or fewer. Long-term is defined as work occurring longer than the short-term period.

[3] The City of Industry does not set construction noise limits in its municipal code or General Plan.

[4] The City of Carson has adopted the Los Angeles County Noise Control Ordinance except as amended by Municipal Code Section 5502.

[5] Although Pure Water components are not located within the City of Los Angeles, the Joint Treatment Site would be located adjacent to the boundary between the City of Carson and the City of Los Angeles, with the nearest NSLUs to the Joint Treatment Site within the City of Los Angeles.

N/A = not applicable; indicates that the jurisdiction has not set an applicable land use for restrictions or numerical construction noise limit.

NSLU = Noise-sensitive land use; dBA = A-weighted decibels; L_{EQ} = one-hour equivalent sound level

As shown in **Table 17** above, the County of Los Angeles and City of Carson apply two sets of noise standards for short-term and long-term construction. The County of Los Angeles defines short-term construction as a duration of up to 9 days, and long-term is defined as 10 days or more, whereas the City of Carson defines short-term as up to 20 days or fewer. Because different levels of noise are deemed tolerable to the average person based on the duration of exposure, it is beneficial to have separate noise limits for short-term and long-term construction equipment usage.

Accordingly, the construction noise thresholds used for the Proposed Project include modified standards based on Section 12.08.440 of the County of Los Angeles Noise Ordinance. The thresholds exclude the multi-family residential and semi-residential/commercial construction noise limits and instead use the County's single-family residential thresholds for all NSLUs, which is a more conservative threshold. This provides for equitable analysis of the various types of residential land uses and consider non-residential NSLUs, such as schools and hospitals. The noise thresholds used for this analysis are found in **Table 18**.

Table 18
SUMMARY OF CONSTRUCTION NOISE THRESHOLDS

Jurisdiction	Applicable Hours[1]	Applicable Construction Period/Type[1]	Applicable Land Use	Temporary Noise Level Limit
All Jurisdictions	7:00 a.m. to 7:00 p.m. (Daytime)	Short-term	NSLU	75 dBA L_{EQ} (12 hour)
		Long-term	NSLU	60 dBA L_{EQ} (12 hour)
	7:00 p.m. to 7:00 a.m. (Nighttime)	Short-term	NSLU	60 dBA L_{EQ} (12 hour)
		Long-term	NSLU	50 dBA L_{EQ} (12 hour)

[1] Short-term is defined in the County of Los Angeles as a duration of 9 days or fewer. Long-term is defined as work occurring longer than the short-term period. (Section 12.08.440 of Noise Control Ordinance)
NSLU = Noise-sensitive land uses. Includes residential land uses, places where people sleep (e.g., hospitals, hotels), and other institutional facilities (e.g., schools, day care centers, libraries).
dBA = A-weighted decibels; L_{EQ} = one-hour equivalent sound level

A temporary or periodic increase in ambient noise levels due to construction of Pure Water's facilities and components would be considered significant if noise generated by construction equipment exceeds the noise levels listed in **Table 18** above. For daytime work, short-term construction impacts would be significant if noise levels at the receptor exceed 75 dBA L_{EQ} (12-hour) or if long-term construction noise levels exceed 60 dBA L_{EQ} (12-hour). Nighttime work construction noise levels would be significant if short-term construction noise levels at the receptor exceed 60 dBA L_{EQ} (12-hour) or if long-term construction noise exceeds 50 dBA L_{EQ} (12-hour).

In addition to the thresholds listed above, construction noise that exceeds the existing ambient noise levels of a given construction area by 5 dBA (12-hour), which is considered a readily perceptible increase in noise levels at nearby sensitive receptors, would be considered significant.

4.1.2 Traffic

For traffic related to the Proposed Project, including construction traffic, a noise level increase of 5 CNEL over existing conditions would be considered perceptible and therefore significant.

4.1.3 Operations

For the purposes of analyzing operational noise impacts associated with the Proposed Project, Metropolitan would utilize the thresholds adopted by each of the 16 applicable local jurisdictions, which are summarized below in **Table 19**. Each of the Proposed Project's operational noise-generating facilities and components would be subject to the thresholds adopted by the jurisdiction within which it is located. If noise levels exceed the operational noise thresholds of those jurisdictions, impacts would be considered significant.

Table 19
SUMMARY OF LOCAL OPERATIONAL NOISE REGULATIONS

Jurisdiction	Land Uses	Exterior Noise Level Limit	Other Standards
City of Azusa	Residential, Transient Lodging, Hospitals, Extended Care, Meeting Facility, Offices, School, Library, Park, Museum	65 dBA L_{DN}	• Ambient noise level applies if it exceeds the standard
	Playground, Park	70 dBA L_{DN}	
City of Baldwin Park	Single-family Residential	55 dBA 7am-10pm 45 dBA 10pm-7am	N/A
	Multi-family Residential	60 dBA 7am-10pm 55 dBA 10pm-7am	
	Commercial	65 dBA 7am-10pm 60 dBA 10pm-7am	
	Industrial	70 dBA any time	

Jurisdiction	Land Uses	Exterior Noise Level Limit	Other Standards
City of Bellflower	N/A		• Prohibits noise audible to the human ear at a distance exceeding 200 feet from the property line of a noise source in a residential zone or within 500 feet of a residential zone • Prohibits any loud, unnecessary, and unusual noise that disturbs the peace or quiet of any neighborhood or that causes discomfort or annoyance to any reasonable person of normal sensitiveness
City of Carson[1]	Noise-sensitive area	45 dBA any time	
	Residential	50 dBA 7am-10pm 45 dBA 10pm-7am	
	Commercial	60 dBA 7am-10pm 55 dBA 10pm-7am	
	Industrial	70 dBA any time	
City of Cerritos	Residential and Agricultural	50 dBA	• May exceed ambient noise by 5 dBA if ambient exceeds the noted limits
	Commercial	60 dBA	
	Industrial	70 dBA	
City of Downey	Residential	55 dBA 7am-10pm 45 dBA 10pm-7am	• Noise exceeding 5 dBA above considered a public nuisance ambient noise levels are
	Commercial	65 dBA any time	
	Manufacturing	70 dBA any time	
City of Duarte	Single-/Two-family Residential	55 dBA 7am-9pm 45 dBA 9pm-7am	
	Multiple-family Residential	55 dBA 7am-9pm 50 dBA 9pm-7am	
	Commercial	60 dBA 7am-9pm 55 dBA 9pm-7am	
	Industrial and Light Manufacturing	70 dBA anytime	
City of Industry	N/A		
City of Irwindale	Residential	50 dBA 7am-10pm 45 dBA 10pm-7am	• Violation occurs if noise exceeds ambient or the noted limit by more than 10 dB
	Commercial	55 dBA 7am-10pm 50 dBA 10pm-7am	
	Industrial	70 dBA 7am-10pm 60 dBA 10pm-7am	

Jurisdiction	Land Uses	Exterior Noise Level Limit	Other Standards
City of Lakewood	Residential	60 dBA	• Violation occurs if noise exceeds the standard by more than 5 dBA • Mechanical equipment shall not be installed within a residential zone unless it is determined by the Director of Community Development that the installation of such equipment would not interfere with the residential land use
City of Long Beach	District One (predominantly residential)	50 dBA 7am-10pm 45 dBA 10pm-7am	• May exceed ambient noise by 5 dBA if ambient exceeds the noted limits
	District Two (predominantly commercial)	60 dBA 7am-10pm 55 dBA 10pm-7am	
	District Three (predominantly industrial)	65 dBA any time	
	District Four (predominantly industrial)	70 dBA any time	
City of Los Angeles[2]	All	N/A	• Violation occurs if noise exceeds ambient by 5 dB at occupied properties
City of Norwalk	Residential	55 dBA 7am-10pm 45 dBA 10pm-7am	• Violation occurs if average noise level exceeds ambient noise level at property line of any residential land by more than 5 dBA
	Commercial	60 dBA any time	
	All other zones	65 dBA any time	
City of Pico Rivera	N/A		• Prohibits unnecessary noises or sounds that are physically annoying to persons of ordinary sensitiveness, or that are so harsh, prolonged, unnatural, or unusual as to cause physical discomfort to inhabitants of any neighborhood
City of Santa Fe Springs[3]	Church, School, Hospital	45 dBA any time	• If ambient noise level exceeds standard, permissible noise level is the ambient level
	Light Agricultural, Residential	50 dBA 7am-10pm 45 dBA 10pm-7am	
	Commercial	60 dBA 7am-10pm 55 dBA 10pm-7am	
	Limited Manufacturing, Public Use Facilities, Buffer Parking	60 dBA any time	
	Manufacturing	70 dBA any time	

Jurisdiction	Land Uses	Exterior Noise Level Limit	Other Standards
City of Whittier	N/A		• Prohibits excessive or unreasonable noise, which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.
County of Los Angeles[3]	Noise-sensitive area	45 dBA any time	
	Residential	50 dBA 7am-10pm 45 dBA 10pm-7am	
	Commercial	60 dBA 7am-10pm 55 dBA 10pm-7am	
	Industrial	70 dBA any time	

Note: Table presents a summary of applicable noise standards; refer to Appendix I for details.

[1] Standards presented are the permitted sound level for a maximum of 15 minutes in a 30-minute period.

[2] Although Pure Water components are not located within the City of Los Angeles, the Joint Treatment Site would be located adjacent to the boundary between the City of Carson and the City of Los Angeles, with the nearest NSLUs to the Joint Treatment Site within the City of Los Angeles.

[3] Standards presented are the permitted sound level for a maximum of 30 minutes in 1 hour.

Operational noise associated with the Joint Treatment Site is subject to the City of Carson Noise Ordinance. The City of Carson Noise Ordinance adopts the standards from the Los Angeles County Code for operational noise, which specifies the allowable operational sound level exposure criteria pertaining to exterior noise levels (**Table 19**)**.**

Chapter 12.08.390 of the Los Angeles County Code also states that if the highest hourly ambient noise level exceeds the set criteria in **Table 19** during daytime and nighttime hours at receiver locations, the ambient noise level shall be the standard. To assess ambient noise conditions, a total of three long-term noise measurements (measurements LT32, LT33, and LT34 included in **Table 13** and shown on **Figure 3a**) were conducted near residential and commercial receiver locations surrounding the Joint Treatment Site that were considered in this analysis **(Figure 6).** These measurements indicated that the existing ambient noise levels at receiver locations R1 through R5, R9, R10, and C1 exceeded the noise level criteria specified by the Los Angeles County Code (**Table 19**). As such, the applicable noise limit criteria for these receiver locations is the highest hourly measured ambient noise level for daytime and nighttime periods. Since the noise created at the Joint Treatment Site would be continuous, long-term noise, this analysis conservatively utilizes the average (as opposed to the highest hourly) existing ambient daytime and nighttime noise levels to determine specific noise level criteria for daytime and nighttime thresholds. No ambient noise data are available for receiver locations R6 through R8 because private property access was not available; therefore, the noise level criteria specified by the Los Angeles County Code are the applicable noise thresholds for these receivers for the purpose of this analysis. **Table 20** summarizes the specific noise level criteria for the Joint Treatment Site facilities at individual receiver locations. If noise levels from operation of the Joint Treatment Site facilities, in combination with existing ambient noise levels, exceed these limits, impacts would be considered significant.

Table 20
SUMMARY OF OPERATIONAL NOISE THRESHOLDS AT JOINT TREATMENT SITE

Receiver Location	Daytime[1] Noise Level Threshold	Nighttime[2] Noise Level Threshold	Basis for Threshold
R1	72	65	Ambient measurement[3]
R2	72	65	Ambient measurement[3]
R3	72	65	Ambient measurement[3]
R4	72	65	Ambient measurement[3]
R5	72	65	Ambient measurement[3]
R6	50	45	Los Angeles County Code[4]
R7	50	45	Los Angeles County Code[4]
R8	50	45	Los Angeles County Code[4]
R9	65	59	Ambient measurement[3]
R10	65	59	Ambient measurement[3]
C1	72	65	Ambient measurement[3]

1 Daytime hours are defined as those between 7:00 a.m. and 10:00 p.m.

2 Nighttime hours are defined as those between 10:00 p.m. and 7:00 a.m.

3 Based on the average measured noise levels of the daytime and nighttime periods.

4 No ambient data are available at these locations; therefore, for the purpose of this analysis, the noise level criteria specified by the Los Angeles County Code are the applicable noise limits for these receivers.

4.2 THRESHOLD 2: VIBRATION

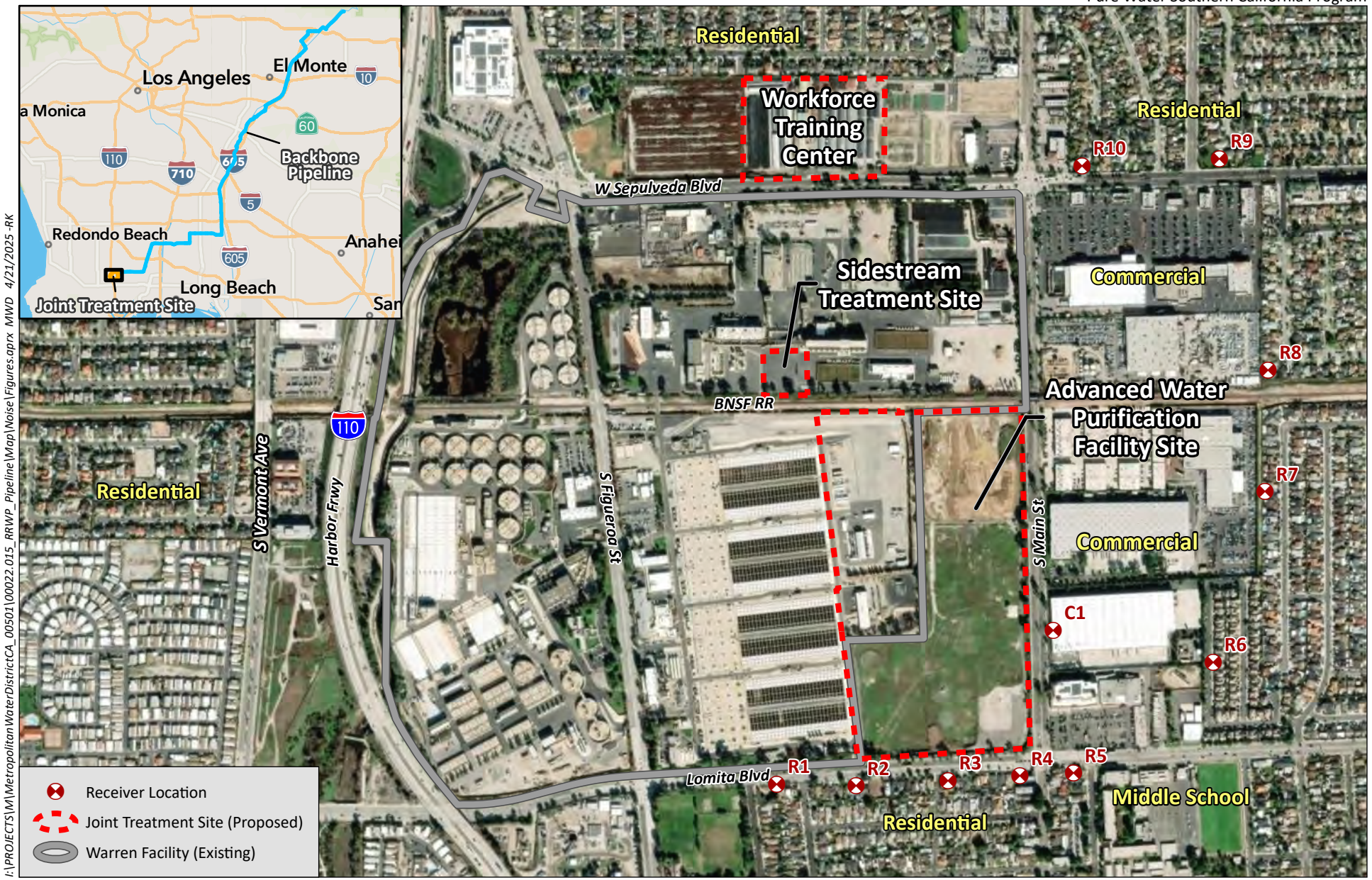
***Threshold 2*:** *Would the Proposed Project result in generation of excessive groundborne vibration or groundborne noise levels?*

Excessive ground-borne vibration related to construction and operational sources would occur if ground-borne vibration exceeds 0.1-inch per second peak particle velocity (PPV) "strongly perceptible" criterion for human annoyance, or the 0.3-inch per second PPV criterion for damage to older structures, as defined in the California Department of Transportation's (Caltrans') 2020 Transportation and Construction Guidance Manual (Caltrans 2020). Impacts would therefore be considered significant if these criteria are exceeded. These criteria are for continuous/frequent intermittent construction sources (such as impact pile drivers, vibratory pile drivers, and vibratory compaction equipment).

4.3 THRESHOLD 3: AIRPORTS

***Threshold 3*:** *If 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?*

Excessive noise exposure 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, is defined as noise levels that exceed the standards in a given jurisdiction's General Plan Noise Element for the associated land use. Impacts would therefore be considered significant if the Proposed



I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\00022.015_RRWP_Pipeline\Map\Noise\Figures.aprx MWD 4/21/2025 -RK

Source: Base Map Layer (Esri)

HELIX Environmental Planning

Joint Treatment Site Operational Receiver Locations

Figure 6

Project would expose people residing or working in the Proposed Project area to noise levels that exceed the standards in a given jurisdiction's General Plan Noise Element for the associated land use, if 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.

5.0 ENVIRONMENTAL COMMITMENTS

Environmental commitments (ECs) represent up-front measures that Metropolitan would undertake as part of responsible design and environmental stewardship. The ECs relevant to noise are listed below and are considered within the impact analysis to determine the extent of potential impacts prior to mitigation.

NOI-EC-1 **Construction Equipment Proper Working Order** Construction equipment will be kept in proper working order for the duration of the construction activities.

NOI-EC-2 **Construction Equipment Mufflers and Silencers.** The Contractor will equip all construction equipment, fixed and mobile, including internal combustion engines, with properly operating and maintained noise mufflers and intake silencers, consistent with the manufacturers' standards.

6.0 IMPACT ANALYSIS

6.1 ISSUE 1: INCREASE IN AMBIENT NOISE

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

6.1.1 Construction

6.1.1.1 Joint Treatment Site

Construction at the Joint Treatment Site would require the use of equipment throughout the site for the duration of construction, which would generate elevated noise levels that would potentially affect nearby residents and other land uses. The primary noise-generating construction activities would include clearing, soils removal, excavation, above-grade construction, and paving. Construction equipment would include excavators, loaders, dump trucks, backhoes, rollers, graders, and cranes (see **Table 16**). Construction equipment would be located at varying locations throughout the Joint Treatment Site. Staging and storage would also occur on site. Nighttime construction within the Joint Treatment Site would generally be limited to activities that generate less noise and/or activities, such as concrete pouring, which may require cooler, nighttime temperatures.

The construction equipment would move across the site throughout a given construction day and would typically be generating noise at varying distances from NSLUs at any given hour. The closest NSLUs to the proposed AWP Facility are residences to its south, approximately 130 feet south of the AWP Facility site's southernmost edge, and over 2,000 feet from the site's northernmost edge. Residences are also located adjacent to the future Workforce Training Center site to the north. For the purposes of this

analysis, an average construction distance of 250 feet is conservatively used to calculate noise levels from construction equipment. This distance represents the distance to nearby residences from the southern edge of the AWP Facility site and represents the average distance from residences to the center of the Workforce Training Center construction site.

The noise thresholds described in **Table 17** established for Pure Water (long-term daytime construction noise limit of 60 dBA L_{EQ} [12-hour] and long-term nighttime construction limit of 50 dBA L_{EQ} [12 hour]) would apply to nearby NSLUs. Exceedance of the thresholds described in **Table 17** would be considered significant. Additionally, an increase of 5 dBA over existing ambient noise levels would also be considered significant. Grading would be the loudest phase of construction with an assumed combination of use of a dump truck, dozer, grader, and vibratory roller, which would generate noise levels of approximately 72.3 dBA L_{EQ} (one hour) at 250 feet. This calculation does not consider attenuation by the presence of existing physical barriers such as existing walls or buildings. These existing barriers would attenuate noise to varying degrees, depending on their height, material, and proximity to construction equipment and receptors. Not all construction noise would rise to the levels of the equipment listed above, and noise levels may be reduced by existing physical barriers such as walls or buildings. However, because it is expected that noise levels during construction would exceed the thresholds provided in **Table 17** and ambient noise levels by more than 5 dBA, noise generated during construction of at the Joint Treatment Site is conservatively determined to be potentially significant.

6.1.1.2 Backbone Pipeline

Construction of the backbone pipeline would require multiple varied pieces of construction equipment. The types of equipment used would vary depending on the construction activity along the alignment. In addition, the distance of construction equipment from NSLUs would vary along the backbone alignment; therefore, this analysis considers individual pieces of construction equipment to determine the setback distances within which construction noise would be significant. Because decibels are logarithmic units, they cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile generates 70 dBA when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Table 21 provides setback distances for NSLUs based on Pure Water's 75-dBA L_{EQ} (12-hour) construction noise threshold for short-term daytime construction (nine days or less). **Table 22** provides setback distances for NSLUs based on Pure Water's 60-dBA L_{EQ} (12-hour) standard for long-term daytime construction (10 days or more) and short-term nighttime construction. **Table 23** provides setback distances for NSLUs based on Pure Water's 50 dBA L_{EQ} (12-hour) threshold for long-term nighttime construction. If an NSLU, such as a residence, is located within these distances, impacts from backbone pipeline construction noise would be potentially significant.

Table 21
SHORT-TERM[1] DAYTIME CONSTRUCTION SETBACK DISTANCES

Equipment Type	Percent Used per Hour	Distance Within Which Noise Levels Would Exceed 75 dBA Threshold				
		No Barrier	With 6-Foot Barrier	With 8-Foot Barrier	With 10-Foot Barrier	With 12-Foot Barrier
Air Compressor	40	43 feet	10 feet	5 feet	4 feet	4 feet
Backhoe	40	43 feet	15 feet	9 feet	7 feet	6 feet
Breaker	10	89 feet	63 feet	35 feet	19 feet	12 feet
Cement Truck	40	49 feet	21 feet	15 feet	10 feet	8 feet
Compactor	10	6 feet	2 feet	1 foot	1 foot	1 foot
Concrete Saw	20	120 feet	15 feet	12 feet	11 feet	11 feet
Crane	16	10 feet	5 feet	5 feet	4 feet	4 feet
Crawler Crane	16	33 feet	27 feet	27 feet	20 feet	13 feet
Dozer	40	43 feet	18 feet	13 feet	9 feet	7 feet
Drill Rig	20	36 feet	15 feet	11 feet	8 feet	6 feet
Dump Truck	40	38 feet	16 feet	12 feet	8 feet	6 feet
Excavator	40	53 feet	23 feet	14 feet	9 feet	7 feet
Generator	100	40 feet	11 feet	8 feet	6 feet	5 feet
Jackhammer	20	111 feet	19 feet	15 feet	13 feet	12 feet
Loader	40	23 feet	10 feet	7 feet	5 feet	4 feet
Paver	50	45 feet	12 feet	10 feet	9 feet	8 feet
Ventilation Fan	100	89 feet	34 feet	22 feet	15 feet	13 feet
Excavator and Dump Truck	40	65 feet	28 feet	18 feet	12 feet	9 feet
Loader and Dump Truck	40	44 feet	19 feet	13 feet	9 feet	7 feet

[1] Short-term = nine days or fewer

Table 22
LONG-TERM[1] DAYTIME AND SHORT-TERM[1] NIGHTTIME CONSTRUCTION SETBACK DISTANCES

Equipment Type	Percent Used per Hour	Distance Within Which Noise Levels Would Exceed 60 dBA Threshold				
		No Barrier	With 6-Foot Barrier	With 8-Foot Barrier	With 10-Foot Barrier	With 12-Foot Barrier
Air Compressor	40	153 feet	41 feet	29 feet	24 feet	21 feet
Backhoe	40	240 feet	80 feet	52 feet	39 feet	33 feet
Breaker	10	500 feet	350 feet	197 feet	102 feet	67 feet
Cement Truck	40	275 feet	116 feet	82 feet	57 feet	46 feet
Compactor	10	35 feet	9 feet	8 feet	7 feet	6 feet
Concrete Saw	20	675 feet	85 feet	69 feet	63 feet	60 feet
Crane	16	57 feet	27 feet	20 feet	14 feet	11 feet
Crawler Crane	16	185 feet	152 feet	150 feet	114 feet	72 feet
Dozer	40	243 feet	102 feet	70 feet	47 feet	37 feet
Drill Rig	20	201 feet	85 feet	60 feet	42 feet	34 feet
Dump Truck	40	211 feet	90 feet	63 feet	44 feet	35 feet
Excavator	40	295 feet	126 feet	77 feet	48 feet	35 feet
Generator	100	218 feet	59 feet	41 feet	34 feet	30 feet
Jackhammer	20	620 feet	108 feet	82 feet	72 feet	66 feet
Loader	40	128 feet	54 feet	37 feet	25 feet	20 feet
Paver	50	255 feet	65 feet	56 feet	50 feet	47 feet
Ventilation Fan	100	500 feet	190 feet	123 feet	86 feet	71 feet
Excavator and Dump Truck	40	363 feet	126 feet	100 feet	65 feet	50 feet
Loader and Dump Truck	40	155 feet	76 feet	52 feet	35 feet	40 feet

[1] Long-term = 10 days or greater
[2] Short-term = nine days or fewer

Table 23
LONG-TERM[1] NIGHTTIME CONSTRUCTION SETBACK DISTANCES

Equipment Type	Percent Used per Hour	Distance Within Which Noise Levels Would Exceed 50 dBA Threshold				
		No Barrier	With 6-Foot Barrier	With 8-Foot Barrier	With 10-Foot Barrier	With 12-Foot Barrier
Air Compressor	40	485 feet	130 feet	90 feet	75 feet	65 feet
Backhoe	40	760 feet	255 feet	165 feet	125 feet	105 feet
Breaker	10	1,580 feet	1,100 feet	623 feet	323 feet	210 feet
Cement Truck	40	870 feet	365 feet	260 feet	180 feet	145 feet
Compactor	10	105 feet	27 feet	24 feet	21 feet	20 feet
Concrete Saw	20	2,130 feet	270 feet	220 feet	200 feet	190 feet
Crane	16	587 feet	475 feet	380 feet	240 feet	165 feet
Crawler Crane	16	585 feet	480 feet	475 feet	360 feet	225 feet
Dozer	40	765 feet	324 feet	221 feet	148 feet	116 feet
Drill Rig	20	640 feet	270 feet	190 feet	130 feet	105 feet
Dump Truck	40	670 feet	280 feet	200 feet	140 feet	110 feet
Excavator	40	930 feet	400 feet	243 feet	150 feet	112 feet
Generator	100	690 feet	185 feet	130 feet	105 feet	95 feet
Jackhammer	20	1,970 feet	340 feet	260 feet	225 feet	210 feet
Loader	40	400 feet	170 feet	115 feet	77 feet	61 feet
Paver	50	810 feet	205 feet	180 feet	160 feet	150 feet
Ventilation Fan	100	1,580 feet	600 feet	390 feet	270 feet	225 feet
Excavator and Dump Truck	40	1,147 feet	490 feet	315 feet	200 feet	160 feet
Loader and Dump Truck	40	780 feet	330 feet	230 feet	160 feet	130 feet

[1] Long-term = 10 days or greater

Short-term and long-term construction noise during both daytime and nighttime hours would exceed the thresholds for NSLUs located within the modeled distances if the necessary setback distances cannot be established (due to ROW or construction limitations, etc.). Because all the exact locations where these various pieces of construction equipment could be used (including staging and storage areas that would be located along the alignment) are not known, it is conservatively assumed that equipment would have the potential to be located within the modeled distances, and would thus have the potential to result in noise levels that exceed thresholds for NSLUs. As such, impacts are considered potentially significant.

Ambient Noise Levels

Construction of the backbone pipeline would also result in a significant impact if noise generated by construction equipment exceeds the ambient noise levels of nearby receptors. Due to the long-term nature of the Proposed Project, precise ambient noise conditions at individual locations at the time of construction cannot be determined currently. Ambient noise surveys were taken at multiple locations along the 39-mile backbone alignment in 2022 and 2023. As shown in **Figures 3a** through **3h**, ambient noise levels would vary depending on the neighborhood in which construction is occurring. If noise levels generated by construction equipment exceed the ambient levels at these locations by 5 dBA (12-hour), as would be the case for many areas, impacts would be significant.

Construction Traffic

Installation of the backbone pipeline would lead to temporary changes in the flow of traffic in neighborhoods and other areas in the vicinity of construction sites, which could affect noise levels on local or nearby roads. Additional construction vehicles would be added to nearby roadways. Temporary roadway closures, and the resulting reassignment of traffic due to detours would result in changes to existing traffic circulation. To analyze how changes in traffic patterns would affect traffic-generated noise levels, estimates of average daily trips (ADT) were analyzed for the eight reaches of the backbone pipeline. These calculations were based on volumes generated by the Proposed Project's traffic consultant. These calculations are based on the kinds of construction activities anticipated for each reach and on estimates of typical roadways in each area. ADT estimates were calculated for each of the following three roadway classifications: local roadways (roadways that provide access to nearby properties); collector roadways (roadways that move traffic from local roadways to arterial roadways); and arterial roadways (major roadways that carry high traffic volumes). The CNEL for each roadway type was calculated using the Federal Highway Administration's Transportation Noise Model for existing and existing with project construction scenarios. CNEL was used because it represents the average noise level over a 24-hour period (both daytime and nighttime noise). CNEL for each scenario is measured at 100 feet from the roadway centerlines to approximate typical distances at nearby land uses. The Project construction scenario includes the addition of both project-related traffic, including haul trucks, and the reassignment (for example, due to detours) of existing traffic for each roadway classification. **Table 24** provides the changes in CNEL for each reach of the backbone pipeline.

Table 24
CONSTRUCTION TRAFFIC NOISE LEVELS

Reach Number	Roadway Classification	No Project CNEL[1]	Project Construction CNEL	Change in CNEL	Significant Increase in Noise?[2]
1	Local	55.2	56.6	+1.5	No
	Collector	59.7	59.7	0	No
	Arterial	68.9	69.8	+0.9	No
2	Local	54.3	55.6	+1.3	No
	Collector	53.5	55.0	+1.5	No
	Arterial	68.9	69.8	+0.9	No
3	Local	53.8	54.6	+0.8	No
	Collector	55.0	55.6	+0.6	No
	Arterial	69.9	69.5	+0.4	No
4	Local	54.2	54.5	+0.3	No
	Collector	56.2	56.5	+0.3	No
	Arterial	69.8	69.9	+0.1	No
5	Local	54.5	55.7	+1.2	No
	Collector	56.7	57.4	+0.7	No
	Arterial	69.9	70.6	+0.7	No
6	Local	54.0	54.3	+0.3	No
	Collector	56.7	56.9	+0.2	No
	Arterial	69.3	69.4	+0.1	No
7	Local	53.9	55.5	+1.6	No
	Collector	55.6	56.8	+1.2	No
	Arterial	68.5	69.4	+0.9	No
8	Local	53.6	56.2	+2.6	No

Reach Number	Roadway Classification	No Project CNEL[1]	Project Construction CNEL	Change in CNEL	Significant Increase in Noise?[2]
	Collector	54.3	56.2	+1.9	No
	Arterial	67.9	69.5	+1.6	No

[1] CNEL measurements are calculated at 100 feet from roadway centerlines.
[2] Significant increase defined as a change of 5 CNEL.
CNEL = Community Noise Equivalent Level

As shown in **Table 24** above, the addition of Proposed Project construction traffic and the reassignment of existing traffic due to detours would result in a temporary increase in noise levels from 0 CNEL to 2.6 CNEL for all three roadway classifications. An increase of 5 dBA is considered readily perceptible to the human ear, and 5 CNEL is therefore considered a significant impact with respect to an increase in daily noise levels. Because the increase in noise levels from construction traffic and the reassignment of existing traffic patterns is not anticipated to reach 5 dBA CNEL on nearby roadways, impacts would be less than significant.

6.1.2 Operations

6.1.2.1 Joint Treatment Site

As discussed in Section 3.2.2.1, the primary noise-generating facilities associated with the Joint Treatment Site considered in this analysis include the sidestream centrate treatment facility, influent pump station, odor control facility, MBR, ozone generator building, BAC facility, membrane filtration facility, RO facility, and pump station. The configuration of these facilities within the overall Joint Treatment Site is shown in **Figure 5**. Facilities that would be located in open, unenclosed areas include the sidestream centrate treatment facility, influent pump station, odor control facility, membrane filtration facility, and RO facility. Facilities that would be enclosed within concrete buildings include the MBR mechanical room, ozone generator building, BAC facility, and pump station.

Figure 6 depicts 10 residential receivers and one commercial receiver surrounding the Joint Treatment Site that were selected as a representative sample of noise in the vicinity. **Table 25** displays the projected daytime and nighttime noise levels at these locations. The projected daytime and nighttime noise levels consider operations at the Joint Treatment Site (not including the Workforce Training Center) in combination with existing daytime and nighttime ambient noise levels, respectively with the exception of R6, R7, and R8, which use the noise level criteria specified by the County of Los Angeles.

Table 25
JOINT TREATMENT SITE OPERATIONAL NOISE LEVELS AT NEARBY RECEPTORS

Receiver Location	Daytime Noise Threshold (dBA L_{EQ})[1]	Nighttime Noise Threshold (dBA L_{EQ})[1]	Projected Joint Treatment Site Noise Level[2] (dBA L_{EQ})	Projected Cumulative Daytime Noise Level[3] (dBA L_{EQ})	Projected Cumulative Nighttime Noise Level[3] (dBA L_{EQ})	Exceeds Threshold?
R1	72	65	41	72	65	No
R2	72	65	49	72	65	No
R3	72	65	42	72	65	No
R4	72	65	44	72	65	No
R5	72	65	41	72	65	No

Receiver Location	Daytime Noise Threshold (dBA L_{EQ})[1]	Nighttime Noise Threshold (dBA L_{EQ})[1]	Projected Joint Treatment Site Noise Level[2] (dBA L_{EQ})	Projected Cumulative Daytime Noise Level[3] (dBA L_{EQ})	Projected Cumulative Nighttime Noise Level[3] (dBA L_{EQ})	Exceeds Threshold?
R6[4]	50	45	36	50	**46**	**Yes**
R7[4]	50	45	32	50	45	No
R8[4]	50	45	37	50	**46**	**Yes**
R9	65	59	29	65	59	No
R10	65	59	33	65	59	No
C1	72	65	53	72	65	No

Source: Veneklasen 2024 (Appendix A)

1 Refer to Table 20.

2 Modeled noise levels from the Joint Treatment Site only (not including the Workforce Training Center).

3 Projected noise level based on operation of the Joint Treatment Site and existing ambient noise combined.

4 No ambient data are available at these locations; therefore, for the purpose of this analysis, the noise level criteria specified by the Los Angeles County Code serve as the applicable noise limits for these receivers.

dBA = A-weighted decibels; L_{EQ} = one-hour equivalent sound level

Noise levels at the 11 receiver locations were analyzed against the daytime and nighttime noise thresholds identified in **Table 20**, which have been included in **Table 25** for reference. As shown in **Table 25**, in combination with the existing ambient noise levels, noise generated by operations at the Joint Treatment Site would cause nighttime noise levels to exceed applicable thresholds at two receiver locations (R6 and R8) where no ambient data are available and the noise level criteria specified by the Los Angeles County Code serve as the applicable noise limits for these receivers for the purpose of this analysis. Impacts are therefore considered potentially significant.

The specific site plan of the Workforce Training Center is not yet complete and therefore calculation of the potential noise level generated at specific NSLUs from Workforce Training Center-related operational noise, such as heating, ventilation, and air conditioning units or other equipment, is not known. Residential NSLUs are located adjacent to the Workforce Training Center site to the north. Because it cannot be determined whether noise levels from the Workforce Training Center to surrounding NSLUs could be reduced to the applicable City of Carson noise limits, impacts are considered potentially significant.

6.1.2.2 Backbone Pipeline

Operational activities for the backbone pipeline would consist of dewatering, inspection, and maintenance activities for the pipeline itself, as well as minor grading of patrol roads and around access structure within the easement areas, primarily along the San Gabriel River. Regular patrolling would also occur along patrol roads for visual inspection of above-ground ancillary facilities and security purposes. These activities would be periodic and short in duration, and would not result in substantial increases in ambient noise levels. Impacts associated with operation of the backbone pipeline would therefore be less than significant.

6.1.3 Significance of Impacts

6.1.3.1 Construction

Joint Treatment Site

Noise generated during construction at the Joint Treatment Site could exceed thresholds at nearby NSLUs, and impacts are considered to be potentially significant.

Backbone Pipeline

Construction of the backbone pipeline would occur adjacent to NSLUs, with equipment anticipated to occur as close as within 30 feet of NSLUs. Work would occur within the setback distances established above in **Tables 21, 22, and 23,** and construction noise is anticipated to exceed thresholds. Construction noise would therefore be potentially significant.

Construction traffic is not anticipated to result in a 5-dBA CNEL increase noise levels on nearby roadways segments. Impacts from the addition of construction traffic and the reassignment of existing traffic patterns are therefore determined to be less than significant.

6.1.3.2 Operations

Joint Treatment Site

Noise generated by operations at the Joint Treatment Site (not including the Workforce Training Center) was calculated to cause nighttime noise levels to exceed applicable thresholds at two receiver locations (R6 and R8). In addition, the siting and orientation of equipment at the Joint Treatment Site may be refined as design for the Proposed Project progresses prior to operation, which could result in exceedances of applicable standards at other receiver locations. Similarly, noise generated by operation of the Workforce Training Center could result in exceedances of applicable standards. Therefore, noise generated during operations at the Joint Treatment Site is considered to be potentially significant.

Backbone Pipeline

Noise impacts associated with operational activities for the backbone pipeline would be less than significant.

6.1.4 Mitigation Measures

6.1.4.1 Construction

As part of Proposed Project design, environmental commitments NOI-EC-1 and NOI-EC-2 would be included to reduce construction noise levels, as described in Section 5.0. To further reduce noise levels during construction, the following mitigation measure shall be implemented. The combination of setback distances and barriers that could be used to achieve the applicable noise levels for backbone pipeline construction are presented in **Tables 22** through **23**.

NOI-MM-1 **Noise Control Plan.** A Noise Control Plan(s) shall be prepared to reduce noise at NSLUs from the Proposed Project's. The plan(s) shall be prepared by the contractor and approved by Metropolitan in coordination with applicable jurisdictions prior to initiation of construction activities. The plan(s) shall include noise control measures to achieve the following standards established for the Proposed Project, to the extent feasible, and allow for completion in light of necessary work methods and the physical constraints of available work areas:

- Noise levels shall be assessed at NSLU structures closest to construction activity.
- Short-term construction is defined as construction lasting a total of nine days or fewer at a given location. Long-term construction is defined as work lasting a total of 10 days or more at a given location.
- Short-term daytime construction noise shall not exceed 75 dBA L_{EQ} (12-hour).
- Long-term daytime construction noise shall not exceed 60 dBA L_{EQ} (12-hour).
- Short-term nighttime construction noise shall not exceed 60 dBA L_{EQ} (12-hour).
- Long-term nighttime construction noise shall not exceed 50 dBA L_{EQ} (12-hour).
- Ambient noise measurements shall be taken prior to construction.
- Construction shall not exceed ambient noise levels of a given construction area by 5 dBA (12-hour).

Noise control measures in the Noise Control Plan could include, but are not necessarily limited to, the following:

- Providing barriers at least two feet higher than equipment's exhaust pipes and engines to block the line-of-sight between construction activities and nearby NSLUs. Materials shall be solid and construction of materials such as masonry, wood, plastic, fiberglass, steel, acoustic blankets or a combination of those materials, with no pronounced cracks or gaps through or below the barrier.
- Increasing setback distances between equipment and NSLUs.
- Physically shielding stationary noise-generating equipment, such as generators and compressors, from direct line-of-sight to NSLUs.
- Using electrical power to run air compressors and similar power tools, in lieu of gas or diesel-powered compressors.
- Reducing construction hours within a given 12-hour period.
- Scheduling deliveries during daytime hours.

- Using noise-producing signals, including horns, whistles, alarms, public address systems, and bells for safety warning purposes only.

- Locating designated worker gathering areas and parking areas away from NSLUs.

When measured noise levels at the NSLU structures are shown to exceed the above-specified noise levels, additional noise control measures or improvements to noise control measures already in place may be implemented in an effort to achieve the applicable noise standards, to the extent feasible. Noise monitoring shall be performed again to record the achieved level of noise reduction.

6.1.4.2 Operation

To reduce noise levels associated with operation of facilities at the Joint Treatment Site to below applicable significance thresholds as identified in the City of Carson Municipal Code, mitigation measure NOI-MM-2 would be implemented.

NOI-MM-2 **Joint Treatment Site Operational Noise Reduction**. Final design for the Joint Treatment Site facilities shall incorporate noise attenuation such that exterior noise levels from operation of the Joint Treatment Site, in combination with existing daytime and nighttime ambient noise levels, do not exceed the existing ambient noise levels at the nearest commercial and residential receptors. Daytime is defined as the period between 7:00 a.m. and 10:00 p.m. Nighttime is defined as the period between 10:00 p.m. and 7:00 a.m.

A qualified acoustical specialist shall review facility design plans prior to construction to ensure noise reduction measures would achieve compliance with applicable noise standards. If necessary, additional noise attenuation measures, such as higher Sound Transmission Class (STC) enclosures, repositioning of equipment, or an enhanced noise barrier (e.g., concrete enclosures), may be recommended by the acoustical specialist to ensure adequate noise attenuation. Once operation of facilities is initiated, noise measurements shall be taken by a qualified acoustical specialist to verify that noise levels generated from facilities comply with applicable noise standards. If noise levels exceed applicable noise standards, additional noise attenuation measures shall be implemented as necessary to achieve the applicable thresholds .

6.1.5 Significance after Mitigation

6.1.5.1 Construction

Joint Treatment Site

Mitigation measure NOI-MM-1 would reduce noise levels for NSLUs near the Joint Treatment Site to the applicable thresholds. While the specific design and location(s) of barriers would be determined as part of the Noise Control Plan required by NOI-MM-1, an example of potential noise attenuation is provided herein: a 13-foot barrier placed approximately 30 feet from nearby receivers would reduce noise levels associated with the simultaneous use of a dump truck, dozer, grader, and vibratory roller located at a distance of 250 feet from receivers to a level below the long-term daytime noise threshold of 60 dBA.

Due to the distance to nearby NSLUs and ability to construct noise barriers, sufficient noise attenuation is feasible, and impacts from Joint Treatment Site construction would be less than significant with implementation of NOI-MM-1.

Backbone Pipeline

Based on the variability of locations at which construction activities could occur and associated site conditions, it cannot be guaranteed that implementation of measure NOI-MM-1 would feasibly reduce noise levels for NSLUs near the backbone pipeline to below the significance threshold; therefore, impacts are considered potentially significant and unavoidable.

6.1.5.2 Operations

Joint Treatment Site

Implementation of mitigation measure NOI-MM-2 requires the Joint Treatment Site facilities to demonstrate that attenuation features have been added such that noise levels would be reduced to below the applicable noise threshold. **Table 26** shows the results of the Joint Treatment Site (not including the Workforce Training Center) modeling where additional attenuation is incorporated. Specifically, the membrane filtration facility and reverse osmosis equipment (except for the reverse osmosis feed pumps) were considered for the purposes of noise attenuation modeling to be located within concrete buildings. As shown in **Table 26**, noise levels with these specific features incorporated would be reduced to below applicable thresholds. As such, sufficient noise attenuation is feasible, and impacts from operations at the Joint Treatment Site would be less than significant with implementation of NOI-MM-2.

Table 26
JOINT TREATMENT SITE OPERATIONAL NOISE LEVELS AT NEARBY RECEPTORS - MITIGATED

Receiver Location	Daytime Noise Threshold (dBA L_{EQ})	Nighttime Noise Threshold (dBA L_{EQ})	Projected Joint Treatment Site Noise Level[1] (dBA L_{EQ})	Projected Cumulative Daytime Noise Level[2] (dBA L_{EQ})	Projected Cumulative Nighttime Noise Level[2] (dBA L_{EQ})	Exceeds Threshold?
R1	72	65	40	72	65	No
R2	72	65	41	72	65	No
R3	72	65	43	72	65	No
R4	72	65	45	72	65	No
R5	72	65	40	72	65	No
R6[3]	50	45	35	50	45	No
R7[3]	50	45	30	50	45	No
R8[3]	50	45	32	50	45	No
R9	65	59	28	65	59	No
R10	65	59	31	65	59	No
C1	72	65	51	72	65	No

Source: Veneklasen 2024 (Appendix A)

[1] Modeled noise levels from Joint Treatment Site only

[2] Projected noise level based on operation of the Joint Treatment Site and existing ambient noise.

[3] No ambient data are available at these locations; therefore, for the purpose of this analysis, the noise level criteria specified by the Los Angeles County Code serve as the applicable noise limits for these receivers.

dBA = A-weighted decibels; L_{EQ} = one-hour equivalent sound level

Similarly, standard noise attenuation features, such as parapets, would provide sufficient noise attenuation for the Workforce Training Center, and impacts from Workforce Training Center operations would be less than significant with implementation of NOI-MM-2. As such, sufficient noise attenuation is feasible, and impacts from Joint Treatment Site operations would be less than significant with implementation of NOI-MM-2.

6.2 ISSUE 2: VIBRATION

6.2.1 Construction

6.2.1.1 Joint Treatment Site

Construction at the Joint Treatment Site is expected to require vibratory rollers and pile drivers. Vibratory rollers are typically used to compact soil following trenching and excavation activities and to compact asphalt. Caltrans provides a reference PPV for a vibratory roller of 0.21 inch per second at 25 feet. Based on this reference PPV, a vibratory roller would generate vibration levels above the "strongly perceptible" human annoyance criterion of 0.1 inch per second PPV within a distance of approximately 45 feet, and above the structural damage criterion for older structures of 0.3 inch per second PPV within a distance of approximately 18 feet.[2]

Pile driving may be required for the installation of foundations at Pure Water's larger above-ground facilities (e.g., the AWP Facility). Caltrans provides a reference PPV for a pile driver of 0.65 inch per second at 25 feet. Based on this reference PPV, a pile driver would generate vibration levels above the "strongly perceptible" human annoyance criterion of 0.1 inch per second PPV within a distance of approximately 130 feet, and above the structural damage criterion for older structures of 0.3 inch per second PPV within a distance of approximately 50 feet.[3]

The nearest vibration-sensitive human receptors and older structures to the Joint Treatment Site are the residences located south of the AWP Facility site across Lomita Boulevard and residences adjacent to the northern side of the Workforce Training Center site. Vibratory rollers and pile drivers used at the AWP Facility site would operate at distances to the residences greater than those within which excessive vibration would occur (45 feet for human annoyance and 18 feet for damage to structures for a vibratory roller; 130 feet for human annoyance and 50 feet for damage to structures for a pile driver). As such, no vibration impacts from construction of the AWP Facility are anticipated. It is not expected that

[2] Equipment PPV = Reference PPV * $(25/D)^n$ (in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2020.

[3] Equipment PPV = Reference PPV * $(25/D)^n$ (in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receiver in feet, and n = 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2020.

pile driving would be required for construction of the Workforce Training Center. Vibratory rollers would likely be required for construction of the Workforce Training Center and could operate within 45 feet of residences; therefore, use of a vibratory roller at the Workforce Training Center site could result in temporary vibration levels at residences in excess of the human annoyance threshold. As such, impacts are considered potentially significant. A vibratory roller is not expected to be used within 18 feet of off-site structures, and therefore would not result in vibration levels at off-site structures in excess of the structure damage threshold.

6.2.1.2 Backbone Pipeline

Construction of the backbone pipeline would require use of vibratory rollers, tunnel boring machines, and microtunnel boring machines. There is potential for vibratory rollers to be used at distances to residences within which excessive vibration would occur (45 feet for human annoyance and 18 feet for damage to structures, as specified above in Section 6.2.1.1).

A tunnel boring machine or microtunnel boring machine could operate underground in the vicinity of vibration-sensitive land uses along portions of the backbone alignment. Vibration from a tunnel boring machine or microtunnel boring machine may vary widely, depending on the depth of the machines, distance to receivers, and intervening material (i.e., soil and/or rock type).

Off-site exposure to such ground-borne vibration would be temporary; however, because the precise distances between the backbone pipeline's vibratory rollers, tunnel boring machines or microtunnel boring machines, and nearby vibration-sensitive receptors are not fully known, vibration levels may exceed both structural damage and human annoyance thresholds. Impacts are therefore considered potentially significant.

6.2.2 Operations

Joint Treatment Site

Pure Water operational activities for the Joint Treatment Site would include inspections and maintenance of equipment, and would not require use of equipment that generates substantial amounts of groundborne vibrations. Impacts associated with operation of the Joint Treatment Site would therefore be less than significant.

Backbone Pipeline

Pure Water operational activities for the backbone pipeline and associated structures and facilities would consist of dewatering, inspection, and maintenance activities, as well as minor grading of patrol roads and around manhole access structures within the easement areas. Regular patrolling would also occur along patrol roads for visual inspection of above-ground ancillary facilities and security purposes. These activities would be periodic and short in duration, and would not result in substantial increases in groundborne vibration levels. Impacts associated with operation of the backbone pipeline would therefore be less than significant.

6.2.3 Significance of Impacts

6.2.3.1 Construction

Joint Treatment Site

Because a vibratory roller used for construction of the Workforce Training Center may be located within 45 feet of vibration-sensitive receptors, vibration levels may exceed the "strongly perceptible" human annoyance criterion at the receptors. Impacts are therefore determined to be potentially significant.

Backbone Pipeline

Because a vibratory roller used for construction of the backbone pipeline may be located within 45 feet of vibration-sensitive receptors and/or within 18 feet of older buildings susceptible to damage from vibration, vibration levels may exceed the "strongly perceptible" human annoyance criterion at receptors and/or the structure damage criterion at older structures. Impacts are therefore determined to be potentially significant.

The use of tunnel boring machines or microtunnel boring machines would generate vibration at varying levels depending on soil and rock conditions. Impacts are therefore determined to be potentially significant.

6.2.3.2 Operations

Joint Treatment Site

Operations at the Joint Treatment Site would not generate substantial vibration. Impacts would be less than significant.

Backbone Pipeline

Operations associated with the backbone pipeline would not generate substantial vibration. Impacts would be less than significant.

6.2.4 Mitigation Measures

6.2.4.1 Construction

To reduce impacts associated with construction vibration, mitigation measures NOI-MM-4 and NOI-MM-5 shall be implemented.

NOI-MM-4 **Vibratory Roller Vibration Limits**. Vibratory rollers shall not be located within 45 feet of a vibration-sensitive receptor to ensure vibration levels of 0.1 inch per second peak particle velocity (PPV) for human annoyance are not exceeded. Vibratory rollers shall also be located a minimum of 18 feet from a structure that is susceptible to vibration damage to ensure vibration levels of 0.3 PPV are not exceeded.

Alternative equipment, such as the use of a plate compactor, handheld compactor, or tamping rammer, would be required within 45 feet of a vibration-sensitive receptor

and/or 18 feet from a structure that is susceptible to damage from vibration to reduce vibration impacts.

NOI-MM-5 **Tunnel Boring Machine Vibration Limits**. To ensure tunnel boring machines and microtunnel boring machines do not exceed vibration levels of 0.1 inch per second PPV for human annoyance and 0.3 inch per second PPV for a structure that is susceptible to vibration damage, vibration monitoring during construction and/or a site-specific vibration analysis prior to construction shall be required. The site-specific analysis shall identify the vibration potential of the boring activities, soil composition, and distance to receptors and recommend attenuation measures or alternative techniques, such as reducing cutter head torque, thrust, and boring speed, if necessary.

6.2.5 Significance after Mitigation

With implementation of mitigation measures NOI-MM-4 and NOI-MM-5, requiring vibration monitoring or a vibration analysis and potential implementation of alternative techniques, impacts from vibration would be less than significant.

6.3 ISSUE 3: AIRCRAFT NOISE

If 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?

6.3.1 Joint Treatment Site

The closest airport to the Joint Treatment Site, Zamperini Field (Torrance Airport), is located approximately 3 miles to the west. Long Beach Airport is located approximately 6.5 miles to the east. The Joint Treatment Site is located well outside both airports' 65 dB CNEL contour (Los Angeles County Airport Land Use Commission 1991). As such, temporary construction workers and permanent workers would not be exposed to excessive airport noise. No impacts from airport noise exposure would occur.

6.3.2 Backbone Pipeline

Long Beach Airport is the closest airport to the backbone pipeline. The airport is located approximately 1.3 miles to the south. San Gabriel Valley Airport (formerly El Monte Airport) is located 1.7 miles to the west. The backbone pipeline would be outside both airports' 65 dB CNEL contours (Los Angeles County Airport Land Use Commission 1991). As such, temporary construction workers and permanent workers would not be exposed to excessive airport noise. No impacts from airport noise exposure would occur.

6.3.3 Significance of Impacts

No impacts related to the exposure of people residing or working in the Proposed Project area would occur for the construction and operation of the Joint Treatment Site facilities or backbone pipeline.

6.3.4 Mitigation Measures

As no significant impacts would occur, no mitigation measures would be required.

6.3.5 Significance after Mitigation

No mitigation is required and impacts would be less than significant.

7.0 REFERENCES

Azusa, City of. 2004. City of Azusa General Plan, Chapter 5: Natural Environment. Available at: https://www.ci.azusa.ca.us/160/General-Plan.

Baldwin Park, City of. 2002. City of Baldwin Park 2020 General Plan, Noise Element. November. Available at: https://www.baldwinpark.com/docssidemenu/community-development/planning/general-plan-individual-elements.

Bellflower, City of. 1994. City of Bellflower General Plan: 1995-2010, Noise Element. December. Available at: https://www.bellflower.org/departments/planning/planning_division/zoning_information.php#outer-247.

California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April.

Carson, City of. 2023. Carson 2040 General Plan Update. Available at: https://www.carson2040.com/. Accessed June 27.

Cerritos, City of. 2004. City of Cerritos General Plan, Chapter 10 Noise Element. January 6. Available at: http://www.cerritos.us/GOVERNMENT/city_regulations/cerritos_general_plan.php.

Downey, City of. 2005. Vision 2025 General Plan, Chapter 6, Noise. January 25. Available at: https://www.downeyca.org/our-city/departments/community-development/planning/general-plan-map.

Duarte, City of. Duarte General Plan 2005-2020, Chapter 4, Noise.2007. Available at: https://www.accessduarte.com/home/showpublisheddocument/488/637921232845830000.
Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September

Industry, City of. 2014. 2014 General Plan. June 12. Available at: https://www.cityofindustry.org/city-hall/departments/development-services/planning/codes-and-regulations.

Irwindale, City of. 2008. City of Irwindale General Plan Update. June. Available at: https://www.irwindaleca.gov/138/Planning.

Lakewood, City of. 1996. The City of Lakewood Comprehensive General Plan. November.
Long Beach, City of. 2019. Draft Noise Element, City of Long Beach General Plan. Available at: https://longbeach.gov/lbds/planning/advance/general-plan/noise-element/.

Los Angeles, County of. 2015. Los Angeles County General Plan. October 6. Available at: https://planning.lacounty.gov/generalplan/generalplan.

Los Angeles County Airport Land Use Commission. 1991. Los Angeles County Airport Land Use Plan. Adopted December 19, 1991. Revised December 1, 2004. Available at: https://planning.lacounty.gov/long-range-planning/los-angeles-county-airport-land-use-plan/.

Norwalk, City of. 1996. The City of Norwalk General Plan, Citywide Elements, Noise. February 29. Available at: https://www.norwalk.org/city-hall/departments/community-development/planning.

Pico Rivera, City of. 2014. City of Pico Rivera General Plan. October. Available at: https://www.pico-rivera.org/depts/ced/planning/plan.asp.

Santa Fe Springs, City of. 2021. Public Review Draft Santa Fe Springs 2040 General Plan, Noise Element. November. Available at: https://www.reimaginesantafesprings.org/documents#GP.

U.S. Department of Transportation. 2008. Roadway Construction Noise Model.

Veneklasen. 2024. Noise Study for the AWPF Layout at the Joint Plant Site for PWSC. July 12.

Whittier, City of. 2021. 2021-2040 Envision Whittier General Plan, Public Safety, Noise, and Health Element. Available at: https://www.cityofwhittier.org/home/showpublisheddocument/10936/637944306024570000.

This page intentionally left blank

Appendix A

AWP Facility Operational Noise Study

Stantec

Noise Study for the AWPF Layout at the Joint Plant Site for PWSC

Draft Final Technical Memorandum

July 12, 2024

Prepared for:

Metropolitan Water District of Southern California

Prepared by:

Veneklasen & Associates

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Abbreviations / Definitions

Abbreviation	Definition
A-weighted Decibels (dB(A))	A filter applied to sound pressure levels in decibel to simulate the response of the human ear at the threshold of hearing. A-weighting de-emphasizes the low frequency components of a sound similar to the human ear at these levels. This metric has been closely tied to subjective reactions of annoyance to noise, and is used as a sound metric in this and in many other environmental acoustics reports. In this report, all dB(A) levels reported refer to the sound pressure level, referenced to 20 µPa.
AWPF	Advanced Water Purification Facility
AWT	Advanced Water Treatment
Decibel (dB)	A unit describing the amplitude of sound in a logarithmic ratio to a reference value.
DPR	Direct Potable Reuse
IPR	Indirect Potable Reuse
LACSD	Los Angeles County Sanitation Districts
Maximum Sound Level (L_{max})	The maximum instantaneous sound level, regardless of duration. These sound levels fluctuate greatly over short periods of time, and are generally used to evaluate audibility of acoustical events.
Metropolitan	Metropolitan Water District of Southern California
NAL	Noise Assessment Locations
Noise	Characterized simply as unwanted sound.
Noise Ordinance	Los Angeles County Noise Control Ordinance
NPR	Non-Potable Reuse
PWSC	Pure Water Southern California (formerly the Regional Recycled Water Program)
RWA	Raw Water Augmentation
Sound	Relatively small fluctuations in the air above and below atmospheric pressure. These fluctuations travel through the air as waves and are perceived by the ear and brain as audible sound.
Sound Level Percentile (L_n)	Also referred to as a "statistical sound level", L_n refers to the sound level that is exceeded for nth percent of a given measurement period. For example, L_{50} refers to the sound level that is exceeded for 50% of a measurement period, i.e. 30 minutes out of an hour. These metrics can be used to evaluate sound levels that are apparent for a given period of time at a measurement location.
Sound Pressure Level (SPL or L_p)	The amplitude of sound compared to the reference value of 20 µPa. Sound Pressure Level is what we perceive as audible sound. Sound Pressure Level decreases as distance from the source to the receiver increases. All sound values discussed in this report refer to Sound Pressure Levels.

Abbreviation	Definition
Warren Facility	A.K. Warren Water Resource Facility

1.0 INTRODUCTION

In accordance with the scope of work in Task Order No. 3, Task 3.3 – "Full-scale AWPF Facilities Plan", this technical memorandum (TM) has been prepared to summarize the approach and findings from a noise study conducted for the planned Advanced Water Purification Facility (AWPF) at the Joint Plant Site for Pure Water Southern California (PWSC) program.

1.1 PROGRAM BACKGROUND AND DRIVERS

The reuse of water from municipal wastewater facilities, including the Los Angeles County Sanitation Districts' (LACSD) A.K. Warren Water Resource Facility (Warren Facility), is a critical supply component necessary to provide long-term sustainable water supply sources to Metropolitan Water District of Southern California's (Metropolitan) customers. Metropolitan and LACSD are developing a large-scale regional recycled water program (PWSC) to beneficially reuse water currently discharged to the Pacific Ocean. The overall program involves construction of an Advanced Water Purification Facility (AWPF) to treat effluent from the LACSD's Warren Facility located in the City of Carson, California, as well as a new regional conveyance system and associated infrastructure to utilize the purified water to augment regional water supplies.

PWSC will purify either primary or secondary wastewater effluent from the Warren Facility through advanced water treatment (AWT) processes, producing water suitable for potable reuse in Southern California. Water from the program will principally be used for indirect potable reuse (IPR) to recharge groundwater basins via surface spreading and/or direct injection. This system will also have the flexibility to accommodate industrial users whose needs are consistent with the quality of water produced by the AWPF. Finally, future use of this system for direct potable reuse (DPR) applications appears feasible once applicable regulations are established. As currently envisioned, PWSC will be implemented in a phased approach with the ultimate capacity of the program dependent on both the availability of source water at the Warren Facility and the anticipated water demands of member agencies for groundwater replenishment, raw water augmentation (RWA) and/or treated water augmentation (TWA). Additionally, non-potable reuse (NPR) to meet the demands within the Warren Facility campus and the City of Carson is also under consideration.

1.2 STUDY BACKGROUND AND OBJECTIVES

The planned AWPF at the Joint Plant Site is expected to generate noise from the operations of the heavy mechanical equipment required for treatment (**Appendix A**). Considering the proximity of neighbors at the eastern and southern edge of the Joint Plant Site, mitigating the noise levels may be necessary. Stantec Team has developed a site layout based on feedback received from Metropolitan and LACSD. However, certain noise mitigation measures may be required based on the expected noise levels. Therefore, Veneklasen & Associates, as part of the Stantec Team, was tasked to conduct a noise study to evaluate the projected noise levels and develop mitigation strategies.

1.3 TM STRUCTURE AND CONTENT

This TM consists of six sections:

- **Section 1 – Introduction**: Provides program background and drivers as well as study objectives.
- **Section 2 – Study Approach**: Delineates the approach used to project the noise levels from the AWPF equipment before and after the noise mitigation strategies.
- **Section 3 – Applicable Noise Standards**: Summarizes the local noise ordinance requirements that the project has to comply with.
- **Section 4 – Existing Noise Levels and Noise Assessment Locations**: Describes the ambient noise levels measured in the AWPF's surrounding area and noise assessment locations used for the study.
- **Section 5 – Noise Modeling, Analysis and Project Noise Impact Results**: Delineates the noise projection process as well as analysis of noise levels before and after the mitigation strategies.
- **Section 6 – Summary:** Summarizes the approach and findings from the study.
- **Section 7 – References**: Lists references used in the study.
- **Appendices**: A compilation of reference materials supporting this study's findings.

2.0 STUDY APPROACH

Figure 2-1 shows the approach used to project the noise levels from the AWPF and propose a mitigation strategy. Since the AWPF will be built in Los Angeles County, the noise levels will need to be under the limits specified by the Los Angeles County (**Section 3**). Using noise meters, long-term ambient noise levels in the AWPF's surrounding area were measured by Veneklasen (**Section 4**). Equipment data and its placement within the current site layout was used to project the noise levels at different locations within the site. Results from the noise modeling are presented in **Section 5**.

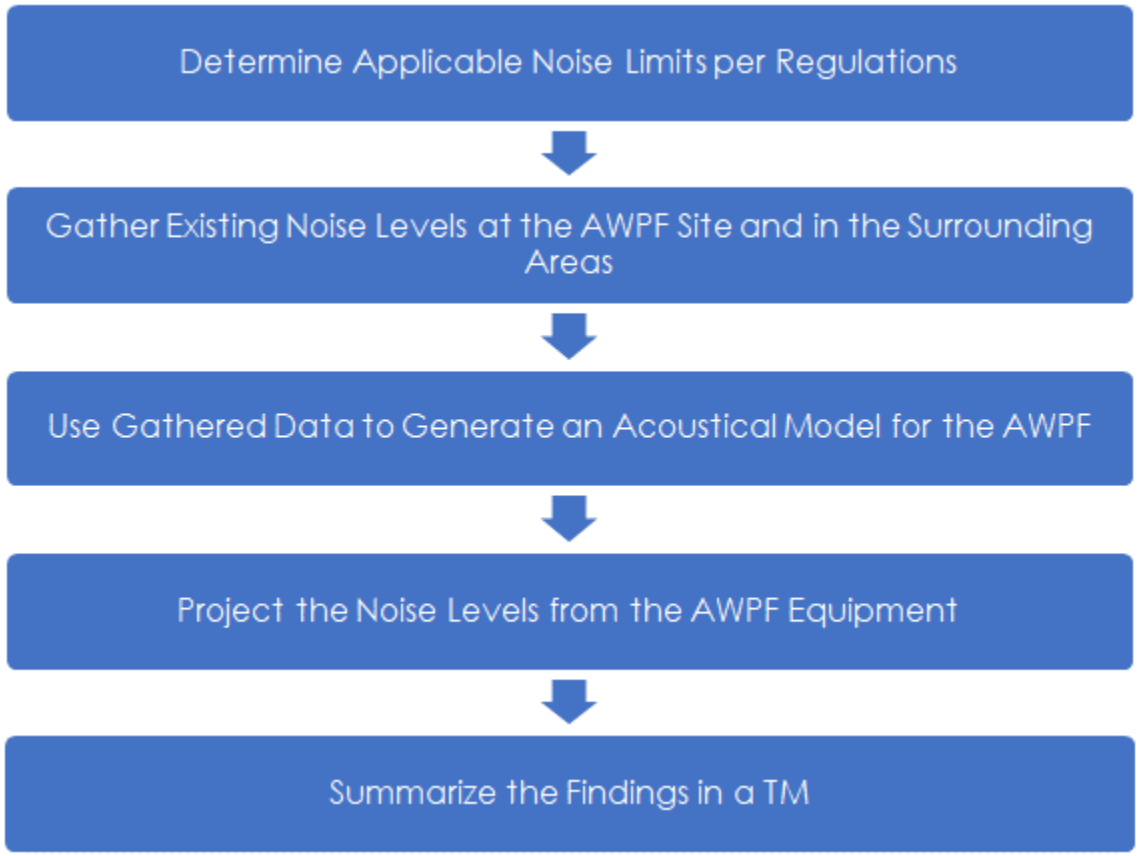


Figure 2-1: Study approach.

3.0 APPLICABLE NOISE STANDARDS

Figure 3-1 shows the site for the planned AWPF; it is located next to LACSD's Warren Facility and is approximately 52 acres. There are residential neighborhoods to the east of Main Street (eastern edge of the site) and south of the Lomita Boulevard (southern edge of the site).

Figure 3-1: Site for the planned AWPF.

The City of Carson noise ordinance provides general guidelines regarding allowable and prohibited noise sources but does not include noise level limits. Since the City of Carson is located within Los Angeles County, the exterior noise standards found in the County of Los Angeles Code, Title 12 Environmental Protection, Chapter 12.08 Noise Control (County of Los Angeles, 1978) apply to all property within the Carson Area; these standards are summarized in **Table 3-1** (residential) and **Table 3-2** (commercial).

The Los Angeles County Noise Control Ordinance (Noise Ordinance) specifies in Section 12.08.390 the allowable operational sound level exposure criteria pertaining to exterior (outdoor) noise levels. The Noise Ordinance specifies noise level limits not to be exceeded for certain periods of time per hour. The sound levels and durations specified in the Noise Ordinance are expressed for this assessment as "sound level percentiles" or "statistical sound levels". The statistical sound level (Ln) refers to a sound level that is exceeded for n percent of a given time period. For example, an L50 of 50 dB(A) specifies that the sound level of 50 dB(A) is exceeded 50% of a given period (i.e. 30 minutes out of an hour). Also, during hours when existing ambient noise level exceed the criteria shown in **Table 3-1** and **Table 3-2**, the exceeded criterion shall be set at the noise level of that

exceedance. The intent of this is to set the criteria such that the subject project does not increase the noise level of the existing noise environment in any of the metrics analyzed.

Table 3-1: Los Angeles County Code Section 12.08.390, residential noise level limits.

Standard No.	Noise Level Criterion (dB(A))		Cumulative Allowable Duration (min/hour)	Noise Level Percentile
	Daytime[a]	Nighttime[b]		
1	50	45	30	L_{50}
2	55	50	15	L_{25}
3	60	55	5	$L_{8.3}$
4	65	60	1	$L_{1.7}$
5	70	65	0	L_{max}

[a] Daytime is defined as the period between 07:00 and 22:00.
[b] Nighttime is defined as the period between 22:00 and 07:00.

Table 3-2: Los Angeles County Code Section 12.08.390, commercial noise level limits.

Standard	Noise Level Criteria (dB(A))		Cumulative Allowable Duration (min/hour)	Noise Level Percentile
	Daytime[a]	Nighttime[b]		
1	60	55	30	L_{50}
2	65	60	15	L_{25}
3	70	65	5	$L_{8.3}$
4	75	70	1	$L_{1.7}$
5	80	75	0	L_{max}

[a] Daytime is defined as the period between 07:00 and 22:00.
[b] Nighttime is defined as the period between 22:00 and 07:00.

The Los Angeles Noise Control Ordinance also states that if the ambient noise level percentile (statistic) exceeds the values specified in the table above, then the measured ambient noise level percentile becomes the standard. Ambient noise levels were measured to determine if the existing ambient noise levels exceeded the noise level criteria shown in the **Table 3-1** and **Table 3-2**.

4.0 EXISTING NOISE LEVELS AND NOISE ASSESSMENT LOCATIONS

As part of the ongoing environmental studies, Metropolitan's acoustical consultant, Veneklasen Associates, Inc., has collected data on ambient noise levels in the area surrounding the site for the planned APWF. Long-term ambient noise measurements were performed between April 20, 2024, and May 6, 2024. These measurements were used to calibrate the existing ambient noise levels at the project site for a typical 24-hour period. All the acoustical measurements were conducted with Nti XL2 and Bruel and Kjaer 2250/2270 sound level meters which conform to ANSI S.14-2014 for Type 1 precision sound level meters. All equipment was field calibrated before and after use.

A summary of the measured ambient levels near the project are presented in **Table 4-1** with the measurement locations shown in **Figure 4-1**. Detailed hourly noise data is included in **Appendix B**. For the purposes of this analysis, the individual receptors (e.g. individual apartments /condo/townhome units, offices spaces, etc.) located within the same property constitute a single combined receptor group. All closest noise assessment locations that were identified are located to the north, northeast, east, southeast, south, southwest, and west of the project site and consist of business, commercial, and residential spaces.

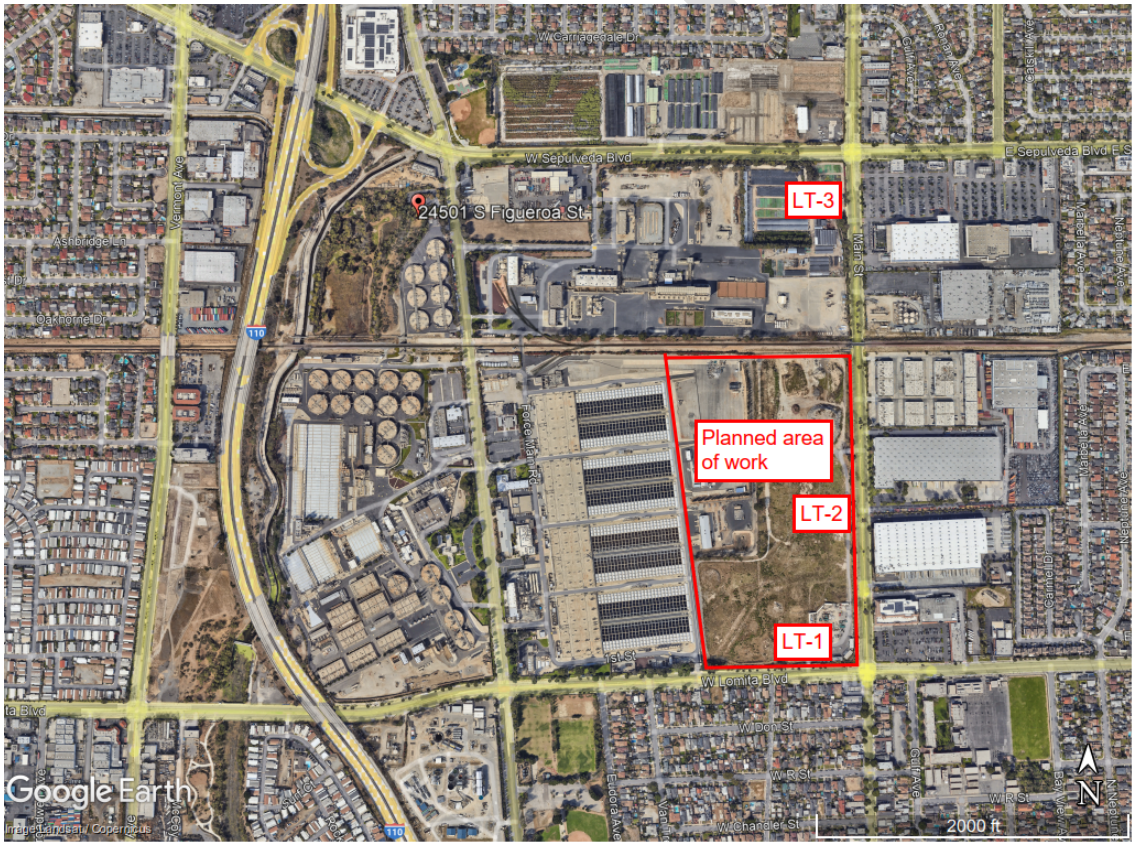


Figure 4-1: Long-term measurement locations used for this study – 4/30/2024.

Table 4-1: Long-term noise levels measured by Veneklasen from 4/30/2024 to 5/6/2024.

			LT01	LT02	LT03
Hour	Start Time	Stop Time	Average	Average	Average
1	12:00 AM	1:00 AM	64	64	58
2	1:00 AM	2:00 AM	62	62	57
3	2:00 AM	3:00 AM	62	63	55
4	3:00 AM	4:00 AM	64	64	57
5	4:00 AM	5:00 AM	66	65	58
6	5:00 AM	6:00 AM	69	67	61
7	6:00 AM	7:00 AM	71	71	63
8	7:00 AM	8:00 AM	72	72	64
9	8:00 AM	9:00 AM	72	73	67
10	9:00 AM	10:00 AM	72	72	66
11	10:00 AM	11:00 AM	72	72	64
12	11:00 AM	12:00 PM	72	72	64
13	12:00 PM	1:00 PM	72	73	65
14	1:00 PM	2:00 PM	73	72	65
15	2:00 PM	3:00 PM	72	73	64
16	3:00 PM	4:00 PM	72	73	65
17	4:00 PM	5:00 PM	73	74	66
18	5:00 PM	6:00 PM	72	73	66
19	6:00 PM	7:00 PM	74	73	65
20	7:00 PM	8:00 PM	71	72	65
21	8:00 PM	9:00 PM	70	70	65
22	9:00 PM	10:00 PM	69	70	62
23	10:00 PM	11:00 PM	69	68	61
24	11:00 PM	12:00 AM	67	66	60
Daytime Average			**72**	**72**	**65**
Nighttime Average			**65**	**65**	**59**

The Veneklasen-conducted ambient noise level measurements indicate that the noise levels criteria specified in the Noise Control Ordinance of the City of Carson are exceeded by existing noise sources at each of the commercial measurement locations. For reference, Location LT01 is located directly across the street from the residential area to the south of the project site, and the noise measurements at this location represent the current ambient for this residential neighborhood. The Noise Control Ordinance allows the noise limit criterion to be set at the highest hourly measured ambient noise level. Since the noise created at the AWPF will be a continuous long-term noise, Veneklasen has conservatively utilized the average existing ambient daytime and nighttime noise levels to determine specific noise level criteria for daytime and nighttime limits. Specific noise level criteria for the AWPF are shown in **Table 4-2**.

Table 4-2: AWPF-specific noise level criteria for Standard No.1, 30 min/hour, L_{50}.

Location No.	AWPF-specific Noise Level Daytime Criterion (dB(A))	AWPF-specific Noise Level Nighttime Criterion (dB(A))
LT-1	72	65
LT-2	72	65
LT-3	65	59

[a] Existing noise levels measured exceeded the sound level limits specified in the Noise Control Ordinance of the City of Carson. Therefore, the criterion shall be set at that measured sound level.

5.0 PROJECTIONS FROM NOISE MODELING

Metropolitan intends to maintain the ambient noise levels at or below the existing ambient noise levels at the areas surrounding the AWPF site after the AWPF is operational. To project the future noise levels, Veneklasen utilized the Predictor computer software program developed by Envirosuite to predict noise levels at the various sensitive receptor locations around the project site. The computer noise model requires noise data on the planned equipment for the project.

Stantec obtained the noise data for the planned treatment and conveyance equipment at the AWPF site from the equipment suppliers, whenever possible. **Figure 5-1** shows the anticipated noise levels for the major noise-producing equipment; the equipment shown in blue boxes were already inside enclosed concrete buildings per the original design intent.

The selection of equipment make/model will be conducted during the preliminary design so these noise levels may be revised during that effort. The placement of the equipment may also change during the preliminary design and therefore, the noise projections from this study should be considered as preliminary.

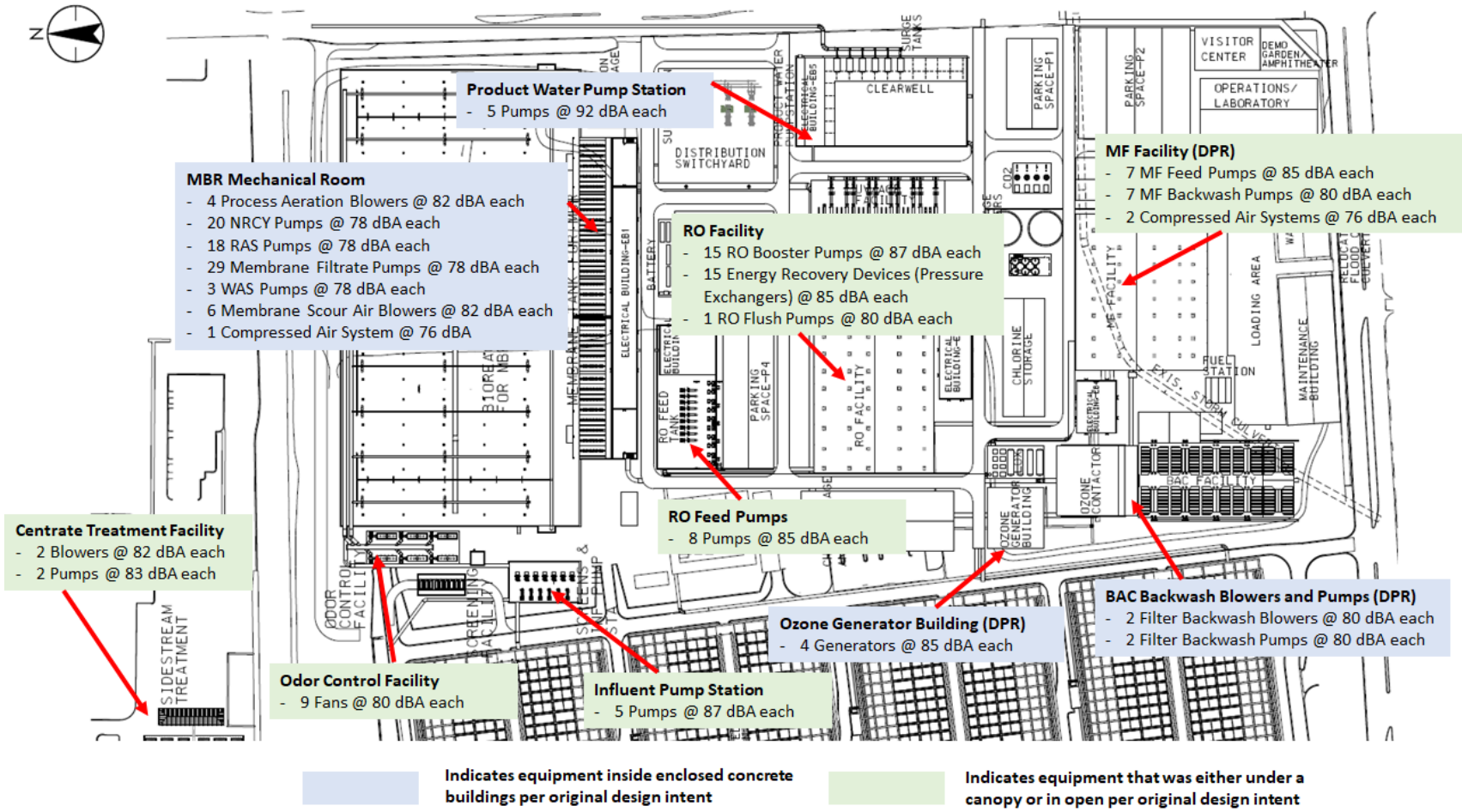


Figure 5-1: Noise levels for the major equipment anticipated at the AWPF.

5.1 UNMITIGATED NOISE LEVELS

Initially, the noise modeling was conducted with the proposed AWPF site layout, equipment placement and anticipated housing for the equipment. The following equipment was meant to be in enclosed concrete buildings (blue boxes in **Figure 5-1**) per the original design intent:

- MBR equipment inside the MBR mechanical room
- Ozone generator equipment inside the ozone generator building
- Product water pumps inside the product water pump station
- BAC backwash blowers and pumps inside the building between the ozone contactors and the BAC filters

Table 5-1 summarizes the findings from noise modeling and **Figure 5-2** shows the noise contours for the unmitigated scenario. The locations for noise receptors shown in **Table 5-1** (Rec 1, Rec 2, etc.) as well as U.S. Postal Service Office (commercial location) are shown on **Figure 5-2**. Modeling showed that the AWPF, when constructed per current design intent, may result in noise levels exceeding the ambient day and/or night levels at certain receptor locations.

Table 5-1: Levels for ambient noise, projected AWPF noise and unmitigated Project (ambient + AWPF) noise.

Scenario	**Noise Levels at Sensitive Receptors (dBA)**										
	Residential										**Commercial**
	Rec 1	**Rec 2**	**Rec 3**	**Rec 4**	**Rec 5**	**Rec 6**	**Rec 7**	**Rec 8**	**Rec 9**	**Rec 10**	**U.S. Postal Service**
Daytime Ambient Noise	72	72	72	72	72	50*	50*	50*	65	65	72
Nighttime Ambient Noise	65	65	65	65	65	45*	45*	45*	59	59	65
Projected Noise from AWPF Only	**41**	**49**	**42**	**44**	**41**	**36**	**32**	**37**	**29**	**33**	**53**
Project (Ambient + AWPF) Daytime Noise	72	72	72	72	72	50	50	50	65	65	72
Project (Ambient + AWPF) Nighttime Noise	65	65	65	65	65	46	45	46	59	59	65
Daytime Criterion Excess Over Ambient L_{50}	0	0	0	0	0	0	0	0	0	0	0
Nighttime Criterion Excess Over Ambient L_{50}	0	0	0	0	0	1	0	1	0	0	0

Note: Existing ambient noise levels measured at R-1 through R-5 (LT-1), US Postal Service (LT-2) and R-10 (LT-3).
*Ambient noise levels not measured but assumed to comply with the noise ordinance and therefore, assumed to be 50/45 decibels daytime/nighttime.

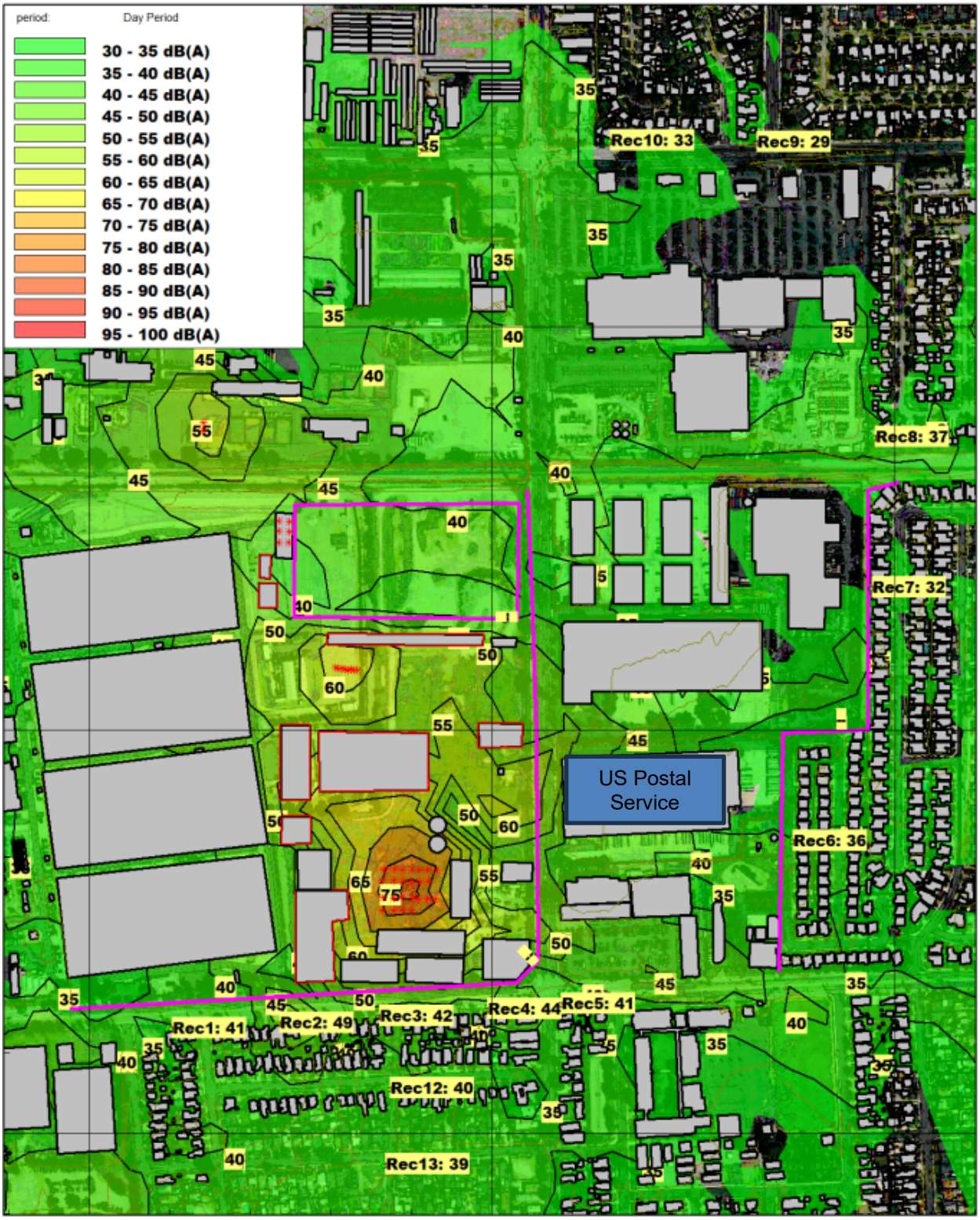


Figure 5-2: Contour map of Project (ambient + AWPF) noise levels for unmitigated scenario.

5.2 MITIGATED NOISE LEVELS

To mitigate the noise levels, additional equipment was assumed to be either housed in concrete buildings including the MF and the RO equipment (excluding the RO feed pumps). Noise modeling was performed with these assumed mitigation measures. The predicted noise levels and contours for the current site layout are shown in **Table 5-2** and **Figure 5-3**, respectively**.** It is evident that locating the primary noise sources located inside concrete buildings keeps the noise levels below the ambient levels. During the preliminary design phase, alternative mitigation measures may be considered including covering the pumps with sound enclosures.

Table 5-2: Existing noise levels and projected AWPF noise levels with additional equipment (MF and RO facilities) housed in concrete buildings.

Scenario	Noise Levels at Sensitive Receptors (dBA)										
	Residential										Commercial
	R-1	R-2	R-3	R -4	R -5	R-6	R-7	R-8	R-9	R-10	U.S. Postal Service
Existing Daytime Ambient Noise Level	72	72	72	72	72	50*	50*	50*	65	65	72
Existing Nighttime Ambient Noise Level	65	65	65	65	65	45*	45*	45*	59	59	65
Projected AWPF Noise Level	**40**	**41**	**43**	**45**	**40**	**35**	**30**	**32**	**28**	**31**	**51**
With Project Daytime Ambient Noise Level	72	72	72	72	72	50	50	50	65	65	72
With Project Nighttime Ambient Noise Level	65	65	65	65	65	45	45	45	59	59	65
Daytime Criterion Excess	0	0	0	0	0	0	0	0	0	0	0
Nighttime Criterion Excess	0	0	0	0	0	0	0	0	0	0	0

Note: Existing ambient noise levels measured at R-1 through R-5 (LT-1), US Postal Service (LT-2) and R-10 (LT-3).
*Ambient noise levels not measured but assumed to comply with the noise ordinance.

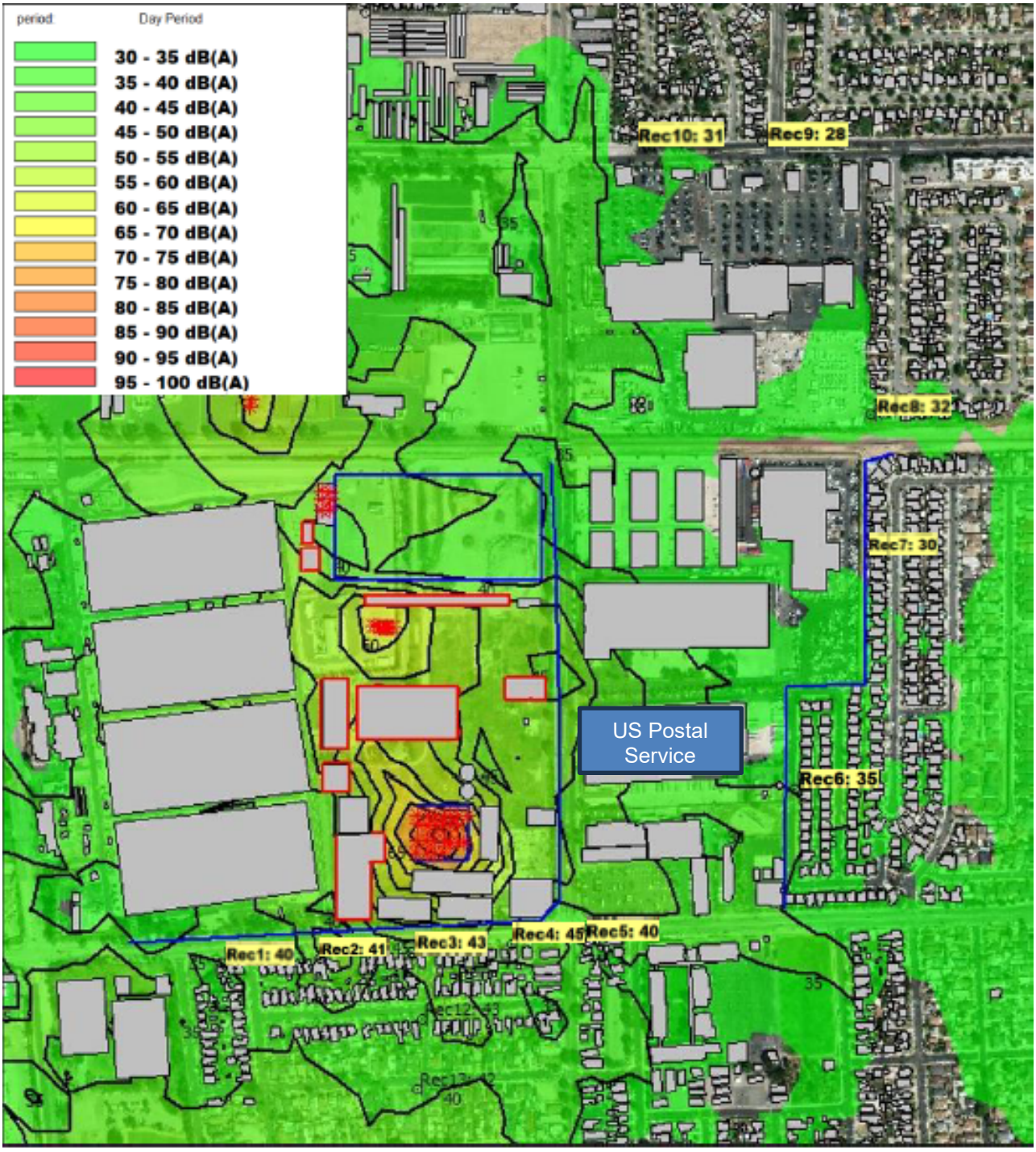


Figure 5-3: Noise contour map of projected AWPF noise levels with equipment in enclosed buildings.

6.0 SUMMARY

The planned AWPF at the Joint Treatment Site is expected to generate noise from the operations of the heavy mechanical equipment required for treatment. Considering the proximity of neighbors at the eastern and southern edge of the Joint Treatment Site, mitigating the noise levels may be necessary. Stantec Team has developed an AWPF site layout based on feedback received from Metropolitan and LACSD. However, certain noise mitigation measures may be required based on the expected noise levels. Therefore, Veneklasen & Associates, as part of the Stantec Team, was tasked to conduct a noise study to evaluate the projected noise levels and develop mitigation strategies.

The AWPF will be built in Los Angeles County and therefore, the sound levels will need to be under the limits specified by the Los Angeles County. However, the existing ambient noise levels already exceed those limits and therefore, Metropolitan plans to keep the noise levels from the AWPF low enough to maintain the ambient noise levels and not increase them.

Using noise meters, long-term ambient noise levels in the AWPF's surrounding area were measured by Veneklasen. Equipment data and its placement within the current site layout, provided by Stantec, was used to project the noise levels at different locations within the site. Initial modeling showed that use of metal buildings/canopies for certain equipment was not sufficient to maintain the noise levels below the ambient noise levels. Therefore, certain additional equipment (MF and RO facilities) were assumed to be in concrete buildings that provide better sound insulation. With these changes, the following equipment is expected to be housed in concrete buildings:

- MBR equipment (pumps, blowers, compressors)
- RO equipment (except the RO feed pumps that reside on top of the RO Feed Tank)
- Ozone generators
- BAC backwash pumps and blowers
- Product water pumps
- MF equipment

With these equipment inside concrete buildings, the projected noise levels from the AWPF will be low enough to not increase the ambient noise levels measured at the AWPF site. During the preliminary design, the equipment noise data and placement will be revisited; however, such effort should be conducted with the ambient noise levels in mind.

7.0 REFERENCES

County of Los Angeles (1978). Noise control ordinance of the County of Los Angeles, County Codes Title 12 Environmental Protection, Chapter 12.08 Noise Control.

Appendix A. Measured Ambient Noise Level Details

			LT01								LT02								LT03					
Hour	Start Time	Stop Time	4/30	5/1	5/2	5/3	5/4	5/5	5/6	Ave.	5/1	4/30	5/2	5/3	5/4	5/5	5/6	Ave.	4/30	5/1	5/2	5/3	5/4	Ave.
1	12:00 AM	1:00 AM		62	63	66	64	65	62	64	64		61	63	68	65	64	64		57	59	58	59	58
2	1:00 AM	2:00 AM		61	61	63	65	64	60	62	58		60	62	66	65	59	62		56	55	56	61	57
3	2:00 AM	3:00 AM		62	61	63	61	64	61	62	70		61	60	63	63	60	63		54	53	54	57	55
4	3:00 AM	4:00 AM		65	64	64	63	62	64	64	72		62	62	62	63	62	64		61	56	53	59	57
5	4:00 AM	5:00 AM		67	66	67	64	64	67	66	65		66	66	64	62	66	65		66	55	60	53	58
6	5:00 AM	6:00 AM		72	72	70	67	65	70	69	69		69	69	65	65	69	67		60	62	61		61
7	6:00 AM	7:00 AM		73	72	72	69	67	73	71	72		72	72	69	68	72	71		61	62	66		63
8	7:00 AM	8:00 AM		74	74	73	70	70	74	72	73		73	73	71	70	73	72		64	64	64		64
9	8:00 AM	9:00 AM		73	73	73	72	70	73	72	73		73	74	71	70	73	73		67	69	66		67
10	9:00 AM	10:00 AM		73	73	73	72	70	72	72	72		73	73	73	72	72	72		66	66	67		66
11	10:00 AM	11:00 AM		72	72	72	72	71	72	72	72	72	73	72	73	73	72	72		64	65	64		64
12	11:00 AM	12:00 PM	72	71	72	73	72	71		72	72	72	72	73	73	72		72		64	64	65		64
13	12:00 PM	1:00 PM	73	71	72	72	71	72		72	73	72	72	73	73	73		73	64	66	65	65		65
14	1:00 PM	2:00 PM	72	72	72	73	76	71		73	72	73	72	73	73	71		72	64	65	64	66		65
15	2:00 PM	3:00 PM	72	73	72	72	72	72		72	73	73	73	73	73	72		73	65	64	64	64		64
16	3:00 PM	4:00 PM	72	72	75	73	71	71		72	73	73	75	74	73	72		73	66	67	65	64		65
17	4:00 PM	5:00 PM	73	73	73	75	71	72		73	74	74	73	75	73	72		74	66	64	66	68		66
18	5:00 PM	6:00 PM	72	73	74	72	72	71		72	73	73	74	74	73	73		73	66	67	66	65		66
19	6:00 PM	7:00 PM	71	72	75	73	72	77		74	73	73	74	73	72	72		73	66	65	66	65		65
20	7:00 PM	8:00 PM	70	73	72	71	70	70		71	73	71	72	76	71	71		72	67	64	67	63		65
21	8:00 PM	9:00 PM	69	71	70	70	69	69		70	71	70	71	71	69	71		70	63	64	65	67		65
22	9:00 PM	10:00 PM	68	69	70	69	68	69		69	70	68	70	70	69	70		70	63	62	63	62		62
23	10:00 PM	11:00 PM	66	66	75	68	68	67		69	68	66	68	68	69	68		68	60	61	61	61		61
24	11:00 PM	12:00 AM	65	70	66	66	67	65		67	66	65	66	66	68	65		66	59	60	60	59		60
								Daytime Average		72						Daytime Average		72					Daytime Average	65
								Nighttime Average		65						Nighttime Average		65					Nighttime Average	59