

5.12 Noise

This section describes applicable laws and policies related to noise and vibration, discusses existing sources of noise and vibration in the Project area, and evaluates potential environmental impacts associated with implementation of the proposed Project. Potential offshore construction noise impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

5.12.1 Regulatory Framework

Federal

Noise Control Act (42 U.S.C. Section 4910)

The federal Noise Control Act required the U.S. Environmental Protection Agency (USEPA) to establish noise emission criteria (40 CFR Chapter 1, Subpart Q) which generally apply to interstate rail carriers and to some types of construction and transportation equipment. USEPA published a guideline (USEPA 1974) containing recommendations for acceptable noise level limits affecting residential land use of 55 dBA Ldn for outdoors and 45 dBA Ldn for indoors.

Transportation Equipment Noise Emission Controls (40 CFR Part 205)

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under Title 40 of the Code of Federal Regulations (CFR) Part 205, Subpart B. The federal truck pass-by noise standard is 80 decibels (dB) at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The Federal Highway Administration (FHWA) regulations for noise abatement must be considered for federal or federally funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the Noise Abatement Criteria (NAC).

Federal Transit Administration Noise and Vibration Guidance

The Federal Transit Administration (FTA) has published the *Transit Noise and Vibration Impact Assessment* report to provide guidance on procedures for assessing impacts at different stages of transit project development (FTA 2006). The report covers both construction and operational noise impacts, and describes a range of measures for controlling excessive noise and vibration. The specified noise criteria are an earlier version of the criteria provided by the Federal Railroad Administration's *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. In general, the primary concern regarding vibration relates to potential damage from construction. The guidance document establishes criteria for evaluating the potential for damage for various structural categories from vibration.

EPA Noise Guidance (NTIS 550\9-54-74-004, 1974)

In response to a federal mandate, USEPA provided guidance in NTIS 550\9-74- 004, 1974 that establishes an Ldn of 55 dBA as the requirement level, with an adequate margin of safety, for areas of outdoor uses, including residences and recreation areas. USEPA’s recommendations contain a factor of safety and do not consider technical or economic feasibility and therefore should not be construed as standards or regulations.

State

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive General Plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable” noise levels for various land use types. Single-family homes are “normally acceptable” in exterior noise environments up to 60 Community Noise Equivalent Level (CNEL) and “conditionally acceptable” up to 70 CNEL. Multiple-family residential uses are “normally acceptable” up to 65 CNEL and “conditionally acceptable” up to 70 CNEL. Schools, libraries, and churches are “normally acceptable” up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

California Noise Control Act of 1973

The California Noise Control Act (California Health and Safety Code, Division 28, Section 46000 et seq.), as found in the California Health and Safety Code, Division 28, Section 46000 et seq., declares that excessive noise is a serious hazard to public health and welfare, and establishes the Office of Noise Control with responsibility to set standards for noise exposure in cooperation with local governments or the state legislature.

California Streets and Highways Code

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, the California Department of Transportation (Caltrans) employs the NAC, promulgated by 40 CFR, as administered by the FHWA.

Local

City of El Segundo General Plan

City policies pertaining to noise are contained in the Land Use and Noise Elements. Since the proposed Project would involve the construction of a water infrastructure project by West Basin, it is exempt from local land use, grading, and building permit requirements (California Government Code Section 53091). The policies outlined in the *City of El Segundo General Plan* (General Plan) Land Uses Element and Noise Element are considered relevant to the proposed Project, as described below.

The intent of the General Plan Land Use Element is to portray the future direction of the city as desired by the existing community. The Land Use Element contains an objective encouraging high-quality development/design standards and a corresponding policy ensuring compliance with noise regulations. The Noise Element is intended to be used as a guide in public and private development matters related to outdoor noise. The Noise Element serves as an aid in defining acceptable land uses and as a guideline for compliance with California Noise Insulation Standards. As stated in Government Code Section 65302 (f), the ultimate purpose of noise control policies and programs is to "minimize the exposure of community residents to excessive noise."

Objective LU5-2: Encourage the construction of high-quality, well designed industrial developments through adoption of property development standards and provisions of community services and utilities.

Policy LU5-2.3: New industrial developments shall comply with seismic, noise, air, water, and environmental regulations.

Goal N1: Provision of a Noise-Safe Environment. Encourage a high quality environment within all parts of the City of El Segundo where the public's health, safety, and welfare are not adversely affected by excessive noise.

Objective N1-1: It is the objective of the City of El Segundo to ensure that City residents are not exposed to mobile noise levels in excess of the interior and exterior noise standards or the single event noise standards specified in the El Segundo Municipal Code.

Objective N1-2: It is the objective of the City of El Segundo to ensure that City residents are not exposed to stationary noise levels in excess of El Segundo's Noise Ordinance standards.

Policy N1-2.1: Require all new projects to meet the City's Noise Ordinance Standards as a condition of building permit approval.

Program N1-2.1A: Address noise impacts in all environmental documents for discretionary approval projects, to insure that noise sources meet City Noise Ordinance standards. These sources may include: mechanical or electrical equipment, truck loading areas, or outdoor speaker systems.

Program N1-2.1B: The City shall establish criteria for determining the type and size of projects that should submit a construction-related noise mitigation plan. Noise mitigation plans shall be submitted to the City Engineer for his review and approval prior to issuance of a grading permit. The plan must display the location of construction equipment and how this noise will be mitigated. These mitigation

measures may involve noise suppression equipment and/or the use of temporary barriers.

Program N1-2.1C: The City shall strictly enforce the El Segundo Municipal Code's time-dependent noise standards for stationary sources. Two of the major sources which shall be closely monitored are industrial facilities and construction activities.

Policy N1-3.1: Encourage site planning to be consistent with the existing and future noise environment and promote development standards in which noise-sensitive projects and residences are mitigated from major noise sources. Short-term and long-term noise control measures should be formulated in a manner compatible with community needs and expectations.

Program N1-3.3A: The City shall review and, if necessary, revise the City Noise Ordinance to ensure that proper regulations are being enforced to protect City residents from excessive noise levels from stationary noise sources.

City of El Segundo General Plan Environmental Impact Report

The City's *General Plan Environmental Impact Report (General Plan EIR)* contains land use compatibility standards for interior and exterior noise. **Table 5.12-1** outlines the compatibility standards for various land uses.

**TABLE 5.12-1
EXTERIOR AND INTERIOR COMPATIBILITY STANDARDS**

Land Use	Ldn (dBA)	
	Exterior Noise Standard	Interior Noise Standard
Residential – single- and two-family	65	55
Residential – multiple-family	75	55
Community clubs	75	55
Schools	75	55
Parks – Sports oriented	75	75
Parks – Relaxation oriented	65	55
Libraries	75	55
Churches	75	55
Sanitariums	65	55
Homes for the aged	65	55
Commercial Activities	75	75
Industrial Activities	75	75

SOURCE: City of El Segundo 1992, Page 4.10-3.

El Segundo Municipal Code

Based on the federal and state guidelines, the City established land use standards for noise, which are provided in the El Segundo Municipal Code (ESMC) Chapter 7-2 (Noise and Vibration). ESMC Section 7-2-4 establishes noise standards for residential, commercial, and residential

properties and ESMC Section 7-2-10 creates an exemption for temporary construction noise as specified below:

No person shall, at any location within the City, create any noise, nor shall any person allow the creation of any noise within the person's control on public or private property (hereinafter 'noise source'), which causes the 5.12 noise level when measured on any other property (hereinafter 'receptor property'), to exceed the applicable noise standard, except as set forth in subsection C1 of this Section.

A. Residential Property: Five (5) dBA above the ambient noise level.

B. Commercial and Industrial Property: Eight (8) dBA above the ambient noise level.

C. Adjustments:

1. *Increases to the noise standards as set forth in subsections A and B of this Section may be permitted in accordance with the following:*

Noise Standard Adjustments

Permitted Increase	Duration of Increase (minutes) ¹
0	30
5	15
10	5
15	1
20	less than 1

NOTES:

¹ Cumulative minutes during any one hour.

2. *If the **receptor** property is located on a boundary between two (2) different noise zones, the lower noise level standard applicable to the quieter zone shall apply. (Ord. 1242, 1-16-1996)*

ESMC Section 7-2-10, Exemptions. According to ESMC Section 7-2-10, the following activities shall be exempted from the provisions of ESMC Chapter 7-2:

(D) Construction Noise: Noise sources associated with or vibration created by construction, repair, or remodeling or any real property, provided said activities do not take place between the hours of six o'clock (6:00) PM and seven o'clock (7:00) AM Monday through Saturday, or at any time on Sunday or a Federal holiday, and provided the noise level created by such activities does not exceed the noise standard of sixty five (65) dBA plus the limits specified in § 7-2-4C of this Chapter as measured on the receptor residential property line and provided any vibration created does not endanger the public health, welfare and safety.

Manhattan Beach Municipal Code

Although the Project is not in the city of Manhattan Beach, the El Segundo Generating Station (ESGS) South Site is located immediately adjacent to Manhattan Beach City limits and within 130 feet of residential units across 45th Street from the South Site. Accordingly, potential impacts to these Manhattan Beach residents are evaluated in light of Manhattan Beach's noise standards.

The City of Manhattan Beach has adopted a noise control ordinance as part of MBMC Chapter 5.48 (Noise Regulations). The noise ordinance prohibits within the city the creation of noise that causes the noise level when measured at any residential property to exceed the noise standards identified in **Table 5.12-2**. In addition, MBMC Section 5.48.060 restricts construction to 7:30 a.m. and 6:00 p.m., Monday through Friday, and 9:00 a.m. and 6:00 p.m. on Saturdays. MBMC Section 5.48.250 exempts construction activities from the daytime standards

**TABLE 5.12-2
CITY OF MANHATTAN BEACH 15-MINUTE EXTERIOR NOISE STANDARDS**

Designated Land Use or Zoning Classification	Time of Day	Exterior A-Weighted Noise Level (dBA)¹
Residential	7:00 a.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial	7:00 a.m. to 10:00 p.m.	70
	10:00 p.m. to 7:00 a.m.	65
Industrial	7:00 a.m. to 10:00 p.m.	75
	10:00 p.m. to 7:00 a.m.	75

NOTES:

¹ If the ambient noise level exceeds the City's noise standards, then the ambient level becomes the exterior noise standard.

SOURCE: City of Manhattan Beach 2016.

5.12.2 Environmental Setting

Noise Scales and Definitions

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is dB. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are shown on **Table 5.12-3**.

**TABLE 5.12-3
SOUND LEVELS AND HUMAN RESPONSE**

Noise Source	dBA Noise Level	Response
Carrier Jet Operation	150	
	140	Harmfully Loud
	130	Pain Threshold
Jet Takeoff (200 ft.) Discotheque	120	
Unmuffled Motorcycle Auto Horn (3 ft.) Rock'n Roll Band Riveting Machine	110	Maximum Vocal Effort Physical Discomfort
Loud Power Mower Jet Takeoff (2000 ft.) Garbage Truck	100	Very Annoying Hearing Damage (Steady 8-Hour Exposure)
Heavy Truck (50 ft.) Pneumatic Drill (50 ft.)	90	
Alarm Clock Freight Train (50 ft.) Vacuum Cleaner (10 ft.)	80	Annoying
Freeway Traffic (50 ft.)	70	Telephone Use Difficult
Dishwashers Air Conditioning Unit (20 ft.)	60	Intrusive
Light Auto Traffic (100 ft.)	50	Quiet
Living Room Bedroom	40	
Library Soft Whisper (15 ft.)	30	Very Quiet
Broadcasting Studio	20	Just Audible
	10	Threshold of Hearing

SOURCE: USEPA 1974.

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time
- The influence of periodic individual loud events
- The community response to changes in the community noise environment

Numerous methods have been developed to measure sound over a period of time; refer to **Table 5.12-4**.

**TABLE 5.12-4
NOISE DESCRIPTORS**

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (USEPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq} . The L_{dn} is calculated by averaging the L_{eq} 's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01} , L_{10} , L_{50} , L_{90} , respectively) of the time during the measurement period.

SOURCE: Harris 1979.

Effects of Noise

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. However, many factors influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude toward the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss
- Interference with Communication
- Effects of Noise on Sleep
- Effects on Performance and Behavior
- Extra-Auditory Health Effects
- Annoyance

Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, as well as the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse effects, as discussed above. In a study conducted by the U.S. Department of Transportation, the effects of annoyance to the community were quantified (Schomer and Associates 2001). In areas where noise levels were consistently above 60 dBA CNEL, approximately 9 percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours.

The sensitive receptors in the Project area include residential uses, schools, places of worship, and parks. Sensitive receptors located in the vicinity of the proposed desalination facility site are listed in **Table 5.12-5**.

**TABLE 5.12-5
NOISE-SENSITIVE RECEPTORS**

Type	Name	Distance from Desalination Facility Site (feet) ¹	Direction from Desalination Facility Site
Residential	Residential Uses	130	South
		1,978	Northeast
Schools	Richmond Street Elementary School	4,818	Northeast
	El Segundo Middle School	5,033	Northeast
	Saint Anthony's Catholic School	5,347	Northeast
	Grand View Elementary School	4,725	South
Places of Worship	El Segundo Christian Church	3,000	Northeast
	True Insight Church	3,743	Northeast
	St. Michael's Episcopal Church	3,785	Northeast
Parks	Recreation Park	4,612	Northeast
	El Segundo Beach	Adjoining	West
	Bruce's Beach Park	4,381	South
	Sand Dune Park	3,558	Southeast

NOTES:

¹ Distances to sensitive receptors are extrapolated from the proposed desalination facility site (ESGS South Site) and not the conveyance facilities, since the conveyance facilities would primarily involve construction-related impacts. The ESGS South site presents the most conservative level of analysis. Therefore, distances to sensitive receptors are extrapolated from the proposed ESGS South Site facilities to the receptor residential property line (the closest distance between ESGS property lines and residential structures across 45th Street is approximately 50 feet).

SOURCE: Google Earth 2016.

Ambient Noise Measurements

To quantify existing ambient noise levels in the Project area, noise measurements were conducted on May 26, 2016; refer to **Table 5.12-6**. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the desalination facility site and proposed conveyance system routes; refer to **Figure 5.12-1**. Ten-minute measurements were taken at each measurement site, between approximately 10:30 AM and 12:30 PM. Meteorological conditions were clear skies, warm, with light wind speeds (0 to 5 miles per hour), and low humidity.

**TABLE 5.12-6
NOISE MEASUREMENTS**

Site	Location/Description	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Peak (dBA)	Time
1	The Strand and 45 th Street	59.3	53.1	79.9	87.6	10:33 AM
2	Along the west side of the bicycle path to the west of the proposed desalination facility site	68.2	64.7	76.1	89.0	10:51 AM
3	La Cienega Boulevard and 120 th Street	70.2	59.7	91.3	110.5	11:27 AM
4	Holly Park	65.6	53.4	88.2	87.6	11:49 AM
5	Jim Thorpe Park	61.0	46.9	86.1	84.0	12:12 PM

SOURCE: Appendix 9.

Noise-monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized free-field microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute for Type I (precision) sound-level meters. The results of the field measurements are shown in **Appendix 9, Noise Data**. Existing measured noise levels range from approximately 59.3 dBA to 70.2 dBA.

Mobile Sources

Mobile noise sources consist of vehicular traffic traveling on the roadway network in the vicinity of the proposed desalination facility site. Mobile source noise is a function of the traffic volume and vehicle speed on the roadways. Vista Del Mar and Grand Avenue are the two primary sources of mobile source noise adjacent to the proposed desalination facility site.

Stationary Noise Sources

The Project area is highly urbanized and consists of a mix of recreational, residential, and industrial uses served by a grid system of arterial and collector streets. The primary sources of stationary noise in the Project vicinity are urban-related activities (i.e., mechanical equipment, parking areas, and recreational areas). The noise associated with these sources may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise. Other noise sources in the Project area include ocean wave noise and wind. It is also noted that the proposed

desalination facility site is located within the existing ESGS, which includes various mechanical equipment that produce noise.

Ground-Borne Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the RMS velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibration. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

Effects of Ground-Borne Vibration

High levels of vibration may cause physical personal injury or damage to buildings. However, ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can affect concentration or disturb sleep. In addition, high levels of ground-borne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes).

In contrast to noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 RMS or lower, well below the threshold of perception for humans, which is around 65 RMS. Most perceptible indoor vibration is caused by sources within buildings, such as mechanical equipment operations, people movement, or door slamming. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

The FTA has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 5.12-7**.

**TABLE 5.12-7
CONSTRUCTION VIBRATION DAMAGE CRITERIA**

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: FTA 2006, Table 12-3.

Typical vibration levels associated with use of different equipment are given in **Table 5.12-8**. The prediction of vibration through the soil at distances removed from the source is difficult to make as the soil/subsoil structure can vary considerably from one site to another. The transmission of vibration waves through soil and rock is mathematically very complex to calculate. When boundaries are present, such as layers of soil or rock or building foundations, then waves can be attenuated or enhanced by refraction and interference. Such phenomena are impossible to foresee.

**TABLE 5.12-8
VIBRATION LEVELS OF VARIOUS EQUIPMENT**

Equipment	Vibration – Peak Particle Velocity (inch/sec) Distance from Source			
	50 feet	100 feet	200 feet	300 feet
Pile Driver, impact (high value), Sheet piling	0.537	0.190	0.067	0.037
Pile Driver, sonic (high value)	0.260	0.092	0.032	0.018
Caisson Drilling	0.031	0.011	0.004	0.002
Jackhammer, Large Bulldozer	0.012	0.004	0.002	0.001

SOURCE: FTA 2006.

5.12.3 Significance Thresholds and Criteria

CEQA Guidelines Appendix G, Environmental Checklist Form, includes questions pertaining to noise. The issues presented in the Environmental Checklist have been used as thresholds of significance in this section. Accordingly, the Project would have a significant adverse environmental impact if it would:

- Expose people to or generate noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies (refer to Impact NOI 5.12-1).
- Expose people or structures to or generate excessive ground-borne vibration or ground-borne noise levels (refer to Impact NOI 5.12-2).
- Cause a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project (refer to Impact NOI 5.12-3).
- Cause a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project (refer to Impact NOI 5.12-4).

- For a project located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels (refer to Impact NOI 5.12-5).
- For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels (refer to Impact NOI 5.12-6).

Noise Impact Criteria

Significance of Changes in Stationary Source Noise Levels

Stationary noise associated with the operation of any facility within a project area is considered significant if it would create, maintain, cause, or allow the sound level, when measured on any other property, to exceed the allowable sound levels within the applicable municipal code.

Methodology

This section evaluates both construction- and operation-related noise and vibration impacts to on-site and surrounding land uses resulting from Project implementation. The ocean water desalination facility is located within the southwestern corner of the city of El Segundo, immediately adjacent to the city of Manhattan Beach, with various other jurisdictions potentially affected by the desalinated water conveyance corridor pipelines in addition to the city of El Segundo. Accordingly, the noise and vibration analysis that involves the ocean water desalination facility considers the General Plan and ESMC. Given the site's proximity to Manhattan Beach, the analysis also considers consistency with the Manhattan Beach Municipal Code (MBMC), as applicable. Potential offshore construction noise impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

Potentially Significant Impacts

The environmental factors determined to be potentially affected by the Project, identified in the Notice of Preparation (see Appendix 1A), are analyzed below. Feasible mitigation measures are recommended, where warranted, to avoid or minimize the Project's significant adverse impacts.

5.12.4 Impacts and Mitigation Measures

Noise Exposure

Impact NOI 5.12-1: Would the Project expose people to or generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects on sensitive receptors onshore. Potential impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

Table 5.12-9 summarizes the impact significance conclusions.

**TABLE 5.12-9
SUMMARY OF IMPACT NOI 5.12-1 IMPACTS ON NOISE EXPOSURE**

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-1: Impacts on noise exposure.			
Local Project			
Construction	SU	LTS	LTSM
Operation	LTSM	LTS	LTSM
Regional Project			
Construction	SU	LTS	LTSM
Operation	LTSM	LTS	LTSM

NOTES:
 LTS = Less than Significant, no mitigation proposed
 LTSM = Less than Significant impact with mitigation
 SU = Significant and Unavoidable impact, even after implementation of mitigation

Local Project

Construction-Related Impacts

Project construction is anticipated to take between 53 and 60 months, depending on the selected site. The greatest construction-related noise impacts would typically occur during the initial site preparation/grading/excavation, which can create the highest levels of noise. Generally, site preparation/grading/excavation has the shortest duration of all construction phases (up to 15 months for the Local Project). Activities that occur during this phase include demolition, excavation, earthmoving, pile driving, and soils compaction. Noise is generated by the operation of heavy-duty trucks, backhoes, pile drivers, and other heavy-duty construction equipment.

Noise from construction activities is generated by two primary sources: (1) the noise related to active construction equipment and (2) the transport of workers, materials, and equipment to construction sites. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residential, hospital, hotel/motel, schools, parks, and places of worship). The FTA has compiled data regarding noise-generating characteristics of specific types of construction equipment and typical construction activities; refer to **Table 5.12-10** and **Table 5.12-11**. These noise levels would decrease rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling distance.

Operating cycles for these types of construction equipment used may involve 1 to 2 minutes of full-power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

**TABLE 5.12-10
CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS**

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Dozer	85
Grader	85
Jack Hammer	88
Loader	85
Paver	89
Pile-Driver (Impact)	101
Pile-Driver (Sonic)	96
Scraper	89
Shovel	82

SOURCE: FTA 2006.

**TABLE 5.12-11
OUTDOOR CONSTRUCTION NOISE LEVELS DURING DIFFERENT PHASES OF CONSTRUCTION**

Construction Phase	Noise Level at 50 Feet (dBA)
Ground Clearing	84
Grading/Excavation	89
Foundations	78
Structural	85
Finishing	89

SOURCE: City of Los Angeles 2006

Ocean Water Desalination Facility

Construction of the Local Project would occur within the existing ESGS site and take up to 72 months. The nearest noise-sensitive receptors (residential uses) are located approximately 130 feet from the South Site. Grading and construction would occur along the existing berm, at the southern edge of the property north of 45th Street. Construction activities would cause increased noise in the immediate site vicinity and along access routes to and from the site due to movement of equipment and workers. Construction would be temporary and limited to the hours of 7 AM to 6 PM.

Construction activities, including sheet pile driving, would occur approximately 130 feet north of the nearest residences within the city of Manhattan Beach. At this distance, maximum noise

levels from pile driving would be approximately 93 dB. Pile driving if necessary, may occur for approximately 3 months. Both El Segundo's and Manhattan Beach's noise ordinances exempt reasonable daytime construction noise. As is typical for construction activities, construction noise would exceed the operational exterior noise standards for residential uses. The ESGS North Site is further away (770 feet) from the closest sensitive receptors to the south and at this distance sheet pile driving noise would be reduced to 77 dBA. As such, impacts at the ESGS North Site would be substantially lower than the ESGS South Site.

Implementation of **Mitigation Measures NOI-1 through NOI-3** would lessen construction noise and ensure that impacts at sensitive receptors would be minimized. Mitigation Measure NOI-1 requires that construction equipment be equipped with properly operating and maintained mufflers and other state-required noise attenuation devices. Mitigation Measure NOI-2 requires that West Basin provide a qualified "Noise Disturbance Coordinator" to respond to local complaints, should they arise. Mitigation Measure NOI-3 would require West Basin to investigate pile installation methods other than percussive pile driving and implement the alternative method if feasible.

However, despite implementation of all feasible mitigation, and despite the fact that construction is exempt from the local noise ordinances, given the duration of construction and proximity to noise-sensitive receptors, and given the City of El Segundo's and City of Manhattan Beach's noise standards for residential uses would be exceeded for an extended duration, construction of the Local Project is considered significant and unavoidable.

Screened Ocean Intake and Concentrate Discharge

Construction of the Local Project ocean intake and discharge facilities would require approximately 36 months to complete, and is anticipated to occur concurrent with ocean water desalination facility construction. Construction equipment could include barges, tug boats, dive boats, cranes, pile-driving equipment (offshore), excavators, loaders, haul trucks, dewatering system, pipe ram, pipe-fusing equipment, and typical equipment required for forming and placing concrete structures and installing mechanical and electrical equipment.

Construction activities would occur during the hours of 7 AM to 6 PM, 5 days per week (except during special marine construction operations, which may require up to 72 hours of continuous marine construction activity during desirable calm-sea conditions). Simultaneous construction of the offshore intake and discharge facilities may be required to maximize efficient use of marine equipment and dive crews.

Construction activities would occur approximately 700 feet from El Segundo Beach (adjoining the ESGS to the west) and 0.38 mile (1,980 feet) from the closest residential uses in Manhattan Beach. Operation of the equipment on the barges would be largely imperceptible onshore, masked by the sounds of the surf. Offshore construction noise impacts to sensitive receptors onshore would be less than significant.

Offshore underwater construction noise, including from pile driving, could temporarily disturb sensitive marine species, including the movement of native resident or migratory marine mammal

species, if individuals are present. Underwater noise would be produced by marine vessels and in-water construction activities, resulting in short-term elevated noise levels near the pipeline that may affect marine mammals, sea turtles, and fishes. Potential impacts of sound and acoustic pressure on marine species, such as behavioral avoidance of the construction area or injury, are discussed and evaluated in Section 5.11, *Marine Biological Resources*.

Desalinated Water Conveyance Components

Local Project desalinated water conveyance components construction would primarily occur within roadway right-of-way (ROW). Pipeline construction would generally occur in a linear fashion, and therefore would not be confined to one location for an extended period of time (pipeline construction typically proceeds at an average rate of approximately 150 feet per day). The duration of construction activity would vary depending upon the pipeline alignment and the particular segment under construction. Noise generation would occur adjacent to any given property for no more than a few weeks to a month as the linear pipeline is installed within the public ROW. Construction equipment would include excavators, loaders, haul trucks, compaction equipment, water trucks, cranes, soil-sorting and screening equipment, shoring systems, paving equipment, and welding equipment. Sensitive receptors (i.e., residential uses, schools, places of worship, and parks) are located adjacent or within close proximity to the proposed pipeline alignments (within approximately 50 feet). Construction activities would also cause increased noise along access routes to and from the construction areas resulting from the movement of equipment and workers.

Adherence to the applicable requirements and compliance with Mitigation Measures NOI-1 and NOI-2 would minimize construction noise impacts at nearby sensitive receptors. Mitigation Measure NOI-1 requires that mobile and stationary equipment be muffled and use best management practices for hauling activities and that stationary construction equipment be located away from noise-sensitive receptors. Mitigation Measure NOI-2 requires that a Noise Disturbance Coordinator be used to respond to and resolve complaints. It is noted that construction activities associated with the water conveyance components would not require pile driving. Implementation of Mitigation Measures NOI-1 and NOI-2 would reduce construction noise impacts. Therefore, impacts would be less than significant after mitigation.

Mitigation Measures:

Implement Mitigation Measures NOI-1 through NOI-3 for impacts to the ocean water desalination facility. No mitigation is required for impacts to the screened ocean intake and concentrate discharge facilities. Implement Mitigation Measure NOI-1 and NOI-2 for impacts to the desalinated water conveyance components.

Local Project Significance Determination:

Significant and Unavoidable Impact for ocean water desalination facility; Less than Significant Impact for the screened ocean intake and concentrate discharge facilities; Less than Significant Impact with Mitigation Incorporated for the desalinated water conveyance components.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Operation of the desalination facility would generate noise from the treatment equipment as well as from increased human activity on the property involved with operating and maintaining the facility. All stationary mechanical equipment (e.g., pumps, generators) would be housed within enclosed structures; therefore, noise generated by ocean water desalination facility operation would be minimal and would not adversely affect nearby sensitive receptors (residential uses located approximately 130 feet south of the ESGS South Site facilities). Major ocean water desalination facility components, such as the reverse osmosis (RO) system, would be fully enclosed in a building and thus would not generate operational noise levels that would expose persons to or generate noise levels in excess of applicable standards.

Operational noise from the desalinated water pump station and discharge pump station would occur approximately 275 feet from the nearest sensitive receptors (residential uses) to the south. At these distances, maximum noise levels from the Local Project discharge pump station (the nearest noise generator to the noise-sensitive receptors) would be approximately 62 dB, assuming 100 dBA at the noise source, and no attenuation from enclosures, intervening structures, or topography, which could exceed Manhattan Beach's operational noise standards for residential uses. However, **Mitigation Measure NOI-4** would require that West Basin enclose all noise-generating machinery to meet nighttime noise standards for residential uses, which would achieve 40 dBA attenuation. As a result, noise levels at the property line would be reduced to below operational noise standards for residential use.

Implementation of the Local Project would not result significantly increase traffic noise. Workers and deliveries entering the site would not substantially increase the noise levels. Furthermore, Mitigation Measure NOI-2 would provide for a 24-hour noise hotline and establish a Noise Disturbance Coordinator to resolve noise complaints that may arise from the local community. Thus, operational noise impacts would be less than significant with mitigation.

Screened Ocean Intake and Concentrate Discharge

The ocean intake and discharge facility would be located underwater and would not generate noise. Impacts would be less than significant.

Desalinated Water Conveyance Components

The desalinated water conveyance facilities would be located underground and would not generate noise. The conveyance pump stations would be within enclosed structures but could generate noise in excess of nighttime standards. Mitigation Measure NOI-4 requires that pump stations be designed with acoustic treatments sufficient to control noise levels below exterior nighttime standards of the local ordinances. Implementation of Mitigation Measure NOI-4 would ensure nighttime noise standards are met. Impacts would be less than significant with mitigation.

Mitigation Measures:

Implement Mitigation Measures NOI-2 and NOI-4 for impacts to the ocean water desalination facility. No mitigation is required for impacts to the screened ocean intake and concentrate

discharge facilities. Implement Mitigation Measure NOI-4 for impacts to the desalinated water conveyance components.

Local Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Regional Project

Construction-Related Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Construction of the Regional Project would require approximately 36 months to complete. No pile driving would be required for the Regional Project. Construction noise would be similar to the Local Project including the potential need for pile driving for approximately four months. Mitigation Measures NOI-1 through NOI-3 would minimize temporary noise impacts during construction. However, even with implementation of all feasible mitigation construction noise would exceed City of El Segundo and City of Manhattan Beach's operational noise standards for residential uses. Although construction activities are exempt from the noise ordinances, exceeding noise standards during the construction period for an extended period of time is considered a significant and unavoidable impact of the Project.

Screened Ocean Intake and Concentrate Discharge

Construction of the Regional Project offshore components would generate noise on the barges and underwater similar to the Local Project. The construction activities would not increase noise levels on the shore, at the beach, or at coastal residences. The noise would be masked by surf noise. Construction of the Regional Project offshore components would result in less than significant noise impacts.

As with the Local Project, underwater noise could affect marine wildlife. Potential impacts of sound and acoustic pressure on marine species, such as behavioral avoidance of the construction area or injury, are discussed and evaluated in Section 5.11, *Marine Biological Resources*.

Desalinated Water Conveyance Components

Construction activities associated with the Regional Project desalinated water conveyance system would be similar to the Local Project. Pipeline installation would occur at approximately 150 feet per day. Noise generation would occur adjacent to any given property no more than a few weeks to a month as the linear pipeline is being installed within the public ROW. Implementation of Mitigation Measures NOI-1 and NOI-2 would ensure Regional Project desalinated water conveyance components construction noise impacts are reduced to less than significant.

Mitigation Measures:

Implement Mitigation Measures NOI-1 through NOI-3 for impacts to the ocean water desalination facility. No mitigation is required for impacts to the screened ocean intake and concentrate discharge facilities. Implement Mitigation Measure NOI-1 and NOI-2 for impacts to the desalinated water conveyance components.

Regional Project Significance Determination:

Significant and Unavoidable Impact for ocean water desalination facility; Less than Significant Impact for the screened ocean intake and concentrate discharge facilities; Less than Significant Impact with Mitigation Incorporated for the desalinated water conveyance components.

Operational Impacts**Ocean Water Desalination Facility – ESGS North and South Sites**

Operational noise impacts of the Regional Project would be similar to the Local Project. Mitigation Measure NOI-4 would require that any noise-generating equipment or activity be enclosed or otherwise attenuated to meet all local noise standards identified in local noise ordinances. With implementation of Mitigation Measure NOI-4, impacts would be less than significant.

Similar to the Local Project, the Regional Project would not result significantly increase traffic noise. Workers and deliveries entering the site would not substantially increase the noise levels. Furthermore, Mitigation Measure NOI-2 would provide for a 24-hour noise hotline and establish a Noise Disturbance Coordinator to resolve noise complaints that may arise from the local community. Operational noise impacts would be less than significant with mitigation.

Screened Ocean Intake and Concentrate Discharge

Similar to the Local Project, the Regional Project ocean intake and discharge facility would be underwater and would not generate noise. Impacts would be less than significant.

Desalinated Water Conveyance Components

Similar to the Local Project, the Regional Project desalinated water conveyance system would be underground and would not generate noise. The pump station would be enclosed and subject to Mitigation Measure NOI-4 to ensure nighttime noise standards are met. Impacts would be less than significant with mitigation.

Mitigation Measures:

Implement Mitigation Measures NOI-2 and NOI-4 for impacts to the ocean water desalination facility. Implement Mitigation Measure NOI-4 for impacts to the desalinated water conveyance components. No mitigation is required for impacts to the screened ocean intake and concentrate discharge facilities.

Regional Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Mitigation Measures:

The following mitigation measures apply to both the Local and Regional Projects, unless otherwise noted.

NOI-1: Prior to construction, West Basin shall ensure that the contractor specifications stipulate that:

- All construction equipment, fixed or mobile, is equipped with properly operating and maintained mufflers and other state-required noise attenuation devices.
- When feasible, construction haul routes shall avoid noise-sensitive uses (e.g., residences, convalescent homes).
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from the nearest noise-sensitive receptors.
- Construction activities that generate noise shall not take place outside of the allowable hours specified by ESMC Section 7-2-10 (allows construction between the hours of 7:00 AM and 6:00 PM Monday through Saturday) for conveyance pipeline installation, and Manhattan Beach Municipal Code Section 5.48.060 (allows construction between 7:30 AM and 6:00 PM Monday through Friday, and from 9:00 AM to 6:00 PM on Saturdays) for noise-generating activities to be taken place at the ESGS sites and offshore. Construction shall be prohibited on Sundays and federal holidays.

NOI-2: Throughout Project construction and operation, West Basin shall document, investigate, evaluate, and attempt to resolve all Project-related noise complaints as soon as possible.

- West Basin shall establish and disseminate a 24/7 hotline telephone number for use by the public to report any undesirable Project noise conditions. If the telephone number is not staffed 24 hours per day, West Basin shall include an automatic answering feature with date and time stamp recording to answer calls when the phone is unattended.
- West Basin shall designate a Noise Disturbance Coordinator during construction and permanently once the facility is operational. The Noise Disturbance Coordinator shall assist in resolving noise complaints to minimize impacts while maintaining the objectives of the construction and operation of the facility. The Noise Disturbance Coordinator shall report all noise complaints to the West Basin program manager.
- For construction noise complaints received outside of the construction hours and days allowed as described by Mitigation Measure NOI-1, the Noise Disturbance Coordinator shall take immediate steps to determine whether Project construction is causing the noise and, if so, to reduce the noise level of that activity or take other appropriate action to remedy the complaint as quickly as possible.
- For construction activities near local residences, the Noise Disturbance Coordinator shall have the authority to require the installation of a temporary noise barrier to reduce noise impacts to the closest sensitive receptors. The noise barriers shall be tall enough to effectively block sight-lines of the construction to the closest residences. The contractor shall install noise barriers as directed by the Noise Disturbance Coordinator to minimize construction noise and resolve noise complaints.
- Deliveries to the treatment facility normally shall not occur before 7:00 AM or after 10:00 PM on weekdays or between 9:00 AM and 6:00 PM on Saturdays, and are not allowed on Sundays. Oversized loads and other heavy-duty vehicles would primarily get to and from the site using main traffic conduits such as Vista Del Mar and Imperial Hwy except for special circumstances to minimize traffic load in residential areas. If for reasons of critical operational needs these hours must be violated, West

Basin shall notify adjacent residences of the unusual circumstance at least 2 days in advance.

- On-site activities outside of enclosures shall not result in noise standard exceedances identified in the local noise ordinances.

NOI-3: West Basin shall determine the feasibility of using construction methods that avoid percussive pile driving. Other methods of pile installation such as vibratory or drilling shall be investigated during development of final designs and implemented if feasible.

NOI-4: West Basin shall ensure that the ocean water desalination facility, pump stations, and all noise-generating equipment are designed to meet exterior daytime and nighttime noise standards at the closest sensitive receptors. West Basin shall require that acoustic treatments be included in Project designs to enclose sound-generating equipment sufficient to meet nighttime exterior noise standards adopted in the City of El Segundo and City of Manhattan Beach Noise Ordinances. Once equipment is installed and operating, noise levels shall be monitored to ensure compliance with the applicable noise standards. If stationary noise exceeds the City of El Segundo's or City of Manhattan Beach's standards, an acoustical engineer shall be retained to install additional noise attenuation measures to meet the applicable noise standard.

Ground-Borne Vibration

Impact NOI 5.12-2: Would the Project expose people or structures to, or generate, excessive ground-borne vibration or ground-borne noise levels?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects. **Table 5.12-12** summarizes the impact significance conclusions on sensitive receptors onshore. Potential impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

TABLE 5.12-12
SUMMARY OF IMPACT NOI 5.12-2 EXPOSE PEOPLE OR STRUCTURES TO, OR GENERATE, EXCESSIVE GROUND-BORNE VIBRATION OR GROUND-BORNE NOISE LEVELS

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-2: Impacts on ground-borne vibration or ground-borne noise levels.			
Local Project			
Construction	LTSM	LTS	LTS
Operation	NI	NI	NI
Regional Project			
Construction	LTS	LTS	LTS
Operation	NI	NI	NI

NOTES:

NI = No Impact, no mitigation proposed
LTS = Less than Significant, no mitigation proposed
LTSM = Less than Significant impact with mitigation

Local Project

Construction-Related Impacts

Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Construction equipment operations generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The FTA has published standard vibration velocities for construction equipment operations that provide conservative criteria to assess impacts from vibration ranging from human annoyance to architectural damage from continuous vibrations (Table 5.12-7). Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. The extent that vibration from construction reaches criteria levels is dependent on soil types between the vibration source and the receiver. Typical vibration levels produced by construction equipment are illustrated in Table 5.12-13. Table 5.12-14 relates vibration levels with human perception.

**TABLE 5.12-13
TYPICAL VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT**

Equipment	Approximate PPV at 25 feet (in/sec) ¹	Approximate PPV at 75 feet (in/sec) ²	Approximate PPV at 130 feet (in/sec) ²
Large Bulldozer	0.089	0.017	0.008
Loaded Trucks	0.076	0.015	0.006
Small Bulldozer	0.003	0.001	0.000
Auger/Drill Rigs	0.089	0.017	0.008
Jackhammer	0.035	0.007	0.003
Vibratory Hammer	0.035	0.007	0.003
Pile Driver (impact)	0.644 – 1.518	0.124 – 0.292	0.054 – 0.128
Pile Driver (sonic)	0.170 – 0.734	0.033 – 0.141	0.014 – 0.062

NOTES:

¹ FTA 2006, Table 12-2.

² Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where:

PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance

PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the *FTA Transit Noise and Vibration Impact Assessment Guidelines*

D = the distance from the equipment to the receiver

**TABLE 5.12-14
CALTRANS VIBRATION ANNOYANCE POTENTIAL CRITERIA**

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

NOTE: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack and-seal equipment, vibratory pile drivers, and vibratory compaction equipment.

SOURCE: Caltrans 2013.

Ocean Water Desalination Facility – ESGS North and South Sites

Construction of the Local Project ocean water desalination facility would take place within the existing ESGS property. As shown in Table 5.12-13, most of the construction activities, including delivery trucks, excavation, and site preparation, would generate low levels of vibration that would not exceed the structural damage potential criteria of 0.12 in/sec. The closest structure on site would be the Chevron storage tank that could be within 25 feet of the pile driving activities. At this close proximity, vibration could exceed damage thresholds for reinforced concrete or steel structures, as noted in Table 5.12-7. **Mitigation Measure NOI-5** would require that West Basin evaluate whether pile driving activities within 25 feet of the existing Chevron storage tank located east of the ESGS site could damage the tank. The mitigation measure requires that construction methods be modified to ensure no damage to the tank. Vibration damage monitoring is required for construction activities within 25 feet of the tank. With implementation of mitigation, the impact would be less than significant.

The closest residential uses are located approximately 130 feet south of the construction area on the ESGS site. At this distance, vibration levels from pile driving would range between 0.014 and 0.128 in/sec PPV (Table 5.12-13). This is below the levels that could result in architectural damage to nearby structures or result in annoyance. Slight vibration may be detectable, but would not result in a substantial annoyance. Furthermore, construction activities would only occur during the day time when residential receptors would be less sensitive to the effect. Impacts from vibration on local residences would be less than significant.

Screened Ocean Intake and Concentrate Discharge

Offshore construction of the Local Project screened ocean intake and discharge would take place beneath the water surface and would not result in substantial vibration that could damage structures or sensitive receptors. Although excavation and pile driving construction methods would be used, the sediment at the ocean floor would not convey vibration perceptibly toward the shore. Impacts would be less than significant.

The construction activities causing vibration would be perceptible to marine wildlife as underwater noise. The ocean floor vibration would not substantially add to the noise effect. See Section 5.11, *Marine Biological Resources*.

Desalinated Water Conveyance Components

Construction of the Local Project desalinated water conveyance system could occur as close as approximately 25 feet from sensitive receptors. At this distance, vibration levels from typical construction methods that would not include pile driving would range between 0.003 and 0.089 in/sec PPV at a distance of 25 feet. Therefore, installation of the pipelines and pump stations would not generate ground-borne vibration levels above levels that could damage structures or result in a nuisance. Impacts would be less than significant.

Mitigation Measures:

Implement Mitigation Measure NOI-5 for impacts related to the ocean water desalination facility. No mitigation measures are required for impacts to the screened ocean intake and concentrate discharge facilities or the desalinated water conveyance components.

Local Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

The Local Project ocean water desalination facility operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Screened Ocean Intake and Concentrate Discharge

The Local Project screened ocean intake and concentrate discharge operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Desalinated Water Conveyance Components

The Local Project desalinated water conveyance components operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Mitigation Measures:

None Required.

Local Project Significance Determination:

No Impact.

Regional Project

Construction-Related Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Similar to the Local Project, construction of the Regional Project could generate construction-related ground-borne vibration. No pile driving would be required for the Regional Project. As a result, construction of the Regional Project would not generate vibration at levels that could

damage structures or result in a nuisance to local sensitive receptors. Impacts would be less than significant.

Screened Ocean Intake and Concentrate Discharge

Offshore construction methods for the Regional Project would not require pile driving. Therefore, construction activities for the Regional Project would not cause ground-borne vibration impacts perceptible at nearby sensitive receptors. Impacts would be less than significant.

Desalinated Water Conveyance Components

Similar to the Local Project, construction of the Regional Project would not generate vibration at levels that could damage structures or result in a nuisance to local sensitive receptors. Impacts would be less than significant.

Mitigation Measures:

None Required.

Regional Project Significance Determination:

Less than Significant Impact.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

The Regional Project ocean water desalination facility operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Screened Ocean Intake and Concentrate Discharge

The Regional Project screened ocean intake and concentrate discharge operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Desalinated Water Conveyance Components

The Regional Project desalinated water conveyance components operations would not involve equipment that would cause ground-borne vibration. No impact would occur.

Mitigation Measures:

None Required.

Regional Project Significance Determination:

No Impact.

Mitigation Measures:

NOI-5: Prior to conducting sheet piling installation activities within 100 feet of the existing Chevron tank, West Basin shall conduct a vibration analysis of the local impact area to evaluate the potential for the construction methods to damage the tank. If vibration analysis concludes that construction methods could result in vibration beneath the tank that could result in structural damage, West Basin shall modify construction methods to ensure vibration would not be generated at levels that could damage the tank. West Basin shall provide the assessment to Chevron for their review and comment. West

Basin shall monitor the existing Chevron tank for damage during construction activities within 25 feet of the tank.

Permanent Ambient Noise Levels

Impact NOI 5.12-3: Would the Project result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects. **Table 5.12-15** summarizes the impact significance conclusions on sensitive receptors onshore. Potential impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

Local Project

Construction-Related Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Construction of the Local Project ocean water desalination facility would occur over 53 to 60 months depending on whether the ESGS South Site or ESGS North Site is selected. Local Project ocean water desalination facility construction would be temporary, and noise impacts would cease upon construction completion. Thus, Local Project ocean water desalination facility construction would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact.

**TABLE 5.12-15
SUMMARY OF IMPACT NOI 5.12-3 PERMANENT AMBIENT NOISE LEVELS**

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-3: Impacts on permanent ambient noise levels.			
Local Project			
Construction	NI	NI	NI
Operation	LTSM	LTS	LTSM
Regional Project			
Construction	NI	NI	NI
Operation	LTSM	LTS	LTSM

NOTES:

NI = No Impact, no mitigation proposed

LTSM = Less than Significant impact with mitigation

Screened Ocean Intake and Concentrate Discharge

Construction of the Local Project ocean intake and discharge facilities would occur over approximately 36 months. Construction would be temporary, and noise impacts would cease upon construction completion. Thus, the Local Project would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact.

Desalinated Water Conveyance Components

Construction of the Local Project desalinated water conveyance system would occur over approximately 24 months. Construction noise impacts would cease upon construction completion and would not result in a permanent increase in ambient noise levels in the Project vicinity. There would be no impact.

Mitigation Measures:

None Required.

Local Project Significance Determination:

No Impact.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

The Local Project ocean water desalination facility operations could generate noise levels above regulatory standards. Operation of the facility would include periodic maintenance visits, nominal increases in employee trips, and mechanical equipment operations. Mitigation Measure NOI-2 would require West Basin to document and attempt to resolve all operational noise complaints as soon as possible and minimize activities that would generate noise outside of structures. West Basin would be required to monitor noise levels at the facility to ensure that the Project does not exceed El Segundo's and Manhattan Beach's noise standards for residential uses. Mitigation Measure NOI-4 would require that West Basin design the facilities with acoustic treatments sufficient to meet local exterior noise standards. Table 5.12-6 provides a listing of existing daytime ambient noise levels at locations within and immediately adjacent to the desalination facility site and proposed conveyance system routes. As shown in Table 5.12-6, the ambient noise level at the Strand and 45th Street is 59.3 dBA Leq. Compliance with the noise ordinance standards would require that the facility control noise sources to levels below existing ambient levels. Therefore, the Project's contribution to the ambient noise would not be perceptible. Impacts would be less than significant with mitigation.

Screened Ocean Intake and Concentrate Discharge

The Local Project intake and discharge facilities would be underwater and would not generate noise. Minor maintenance activities would require use of small marine vessels several times per year that would not substantially affect noise levels. Impacts would be less than significant.

Desalinated Water Conveyance Components

The Local Project desalinated water conveyance pipelines would operate below ground and would not generate noise. Pump stations would be subject to Mitigation Measure NOI-4 requiring acoustic treatments sufficient to meet exterior noise standards. Therefore, Local Project desalinated water components operations would not permanently increase noise levels. Impacts would be less than significant with mitigation.

Mitigation Measures:

Implement Mitigation Measure NOI-2 and NOI-4 for the ocean water desalination facility and the screened ocean intake and concentrate discharge facilities. Implement Mitigation Measure NOI-4 for the desalinated water conveyance components.

Local Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Regional Project**Construction-Related Impacts****Ocean Water Desalination Facility – ESGS North and South Sites**

Similar to the Local Project, construction of the Regional Project ocean water desalination facility construction would be temporary and would not permanently increase ambient noise levels. There would be no impact.

Screened Ocean Intake and Concentrate Discharge

Similar to the Local Project, construction of the Regional Project ocean intake and discharge facilities would be temporary and would not permanently increase ambient noise. There would be no impact.

Desalinated Water Conveyance Components

Similar to the Local Project, construction of the Regional Project desalinated water conveyance system would be temporary and would not permanently increase ambient noise. There would be no impact.

Mitigation Measures:

None Required.

Regional Project Significance Determination:

No Impact.

Operational Impacts**Ocean Water Desalination Facility – ESGS North and South Sites**

Similar to the Local Project, operation of the Regional Project would generate noise within structures designed to minimize noise impacts to sensitive receptors. On-site activities associated with facility operation would be subject to Mitigation Measure NOI-2, ensuring that the facility will not increase ambient noise levels compared with existing conditions. Mitigation Measure NOI-4 would ensure that structures are designed with acoustic treatments sufficient to meet exterior noise standards. With mitigation, a less than significant impact would occur.

Screened Ocean Intake and Concentrate Discharge

Similar to the Local Project, operation of the intake and discharge facilities underwater would not generate noise. Minor maintenance activities would require use of small marine vessels several times per year that would not substantially affect noise levels. Impacts would be less than significant.

Desalinated Water Conveyance Components

Similar to the Local Project, the desalinated water conveyance system would be below ground and would not involve noise-generating equipment. The pump stations would be subject to Mitigation Measure NOI-4 to ensure acoustic treatments are sufficient to meet local noise standards. With implementation of mitigation, the Project would not result in a permanent increase to ambient noise levels.

Mitigation Measures:

Implement Mitigation Measure NOI-2 and NOI-4 for the ocean water desalination facility and the screened ocean intake and concentrate discharge facilities. Implement Mitigation Measure NOI-4 for the desalinated water conveyance components.

Regional Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Temporary Increase in Ambient Noise Levels

Impact NOI 5.12-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects. **Table 5.12-16** summarizes the impact significance conclusions on sensitive receptors onshore. Potential impacts on the marine environment are discussed in Section 5.11, *Marine Biological Resources*.

**TABLE 5.12-16
SUMMARY OF IMPACT NOI 5.12-4 TEMPORARY AMBIENT NOISE LEVELS**

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-4: Impacts on temporary ambient noise levels.			
Local Project			
Construction	SU	LTS	LTSM
Operation	LTSM	LTS	LTSM
Regional Project			
Construction	SU	LTS	LTSM
Operation	LTSM	LTS	LTSM

NOTES:

LTS = Less than Significant, no mitigation proposed

LTSM = Less than Significant impact with mitigation

SU = Significant and Unavoidable impact, even after implementation of mitigation

Local Project

Construction-Related Impacts

Ocean Water Desalination Facility - ESGS North and South Sites

Construction of the Local Project would occur within the existing ESGS site and take place over up to 72 months. The nearest noise-sensitive receptors (residential uses) are located approximately 130 feet from the South Site. Grading and construction would occur along the existing berm, at the southern edge of the property north of 45th Street. Construction activities would cause increased noise in the immediate site vicinity and along access routes to and from the site due to movement of equipment and workers. Construction would be temporary and limited to the hours of 7 AM to 6 PM. As shown in Table 5.12-14, construction activities, including pile driving, would generate noise in excess of ambient levels that would be perceptible to off-site receptors including residences, bicyclists, and beachgoers. Impacts from general construction activities such as grading could increase daytime ambient noise levels temporarily.

Implementation of Mitigation Measures NOI-1 through and NOI-3 would lessen construction noise and ensure that impacts at sensitive receptors are minimized. However, despite implementation of mitigation, temporary construction activities would occur over an extended period of time and would include pile driving and therefore impacts associated with the Local Project would be significant and unavoidable.

Screened Ocean Intake and Concentrate Discharge

Offshore construction activities would occur approximately 700 feet from El Segundo Beach (adjoining the ESGS to the west), and 0.38-mile (1,980 feet) from the closest residential uses in Manhattan Beach. However, operation of the equipment on the barges would be largely imperceptible on shore, masked by the sounds of the surf. Offshore construction noise impacts to sensitive receptors onshore would be less than significant.

Offshore underwater construction noise, including from pile driving, could temporarily disturb sensitive marine species, including the movement of native resident or migratory marine mammal species, if individuals are present. Underwater noise would be produced by marine vessels and in-water construction activities, resulting in short-term elevated noise levels near the pipeline that may affect marine mammals, sea turtles, and fishes. Potential impacts of sound and acoustic pressure on marine species, such as behavioral avoidance of the construction area or injury, are discussed and evaluated in Section 5.11, *Marine Biological Resources*.

Desalinated Water Conveyance Components

Local Project desalinated water conveyance components construction would primarily occur within roadway ROW. Pipeline construction would generally occur in a linear fashion, and therefore, would not be confined to one location for an extended period of time (pipeline construction typically proceeds at a rate of approximately 150 feet per day). The duration of construction activity would vary depending upon the pipeline alignment and the particular segment under construction. Noise generation would occur adjacent to any given property no more than a few weeks to a month as the linear pipeline is installed within the public right of way. Construction equipment would include excavators, loaders, haul trucks, compaction equipment,

water trucks, cranes, soil-sorting and screening equipment, shoring systems, paving equipment, and welding equipment. Sensitive receptors (i.e., residential uses, schools, places of worship, and parks) are located adjacent or within close proximity to the proposed pipeline alignments (within approximately 50 feet). Construction activities would also cause increased noise along access routes to and from the construction areas due to movement of equipment and workers.

Adherence to the applicable requirements and compliance with Mitigation Measures NOI-1 and NOI-2 would minimize construction noise impacts at nearby sensitive receptors. Mitigation Measure NOI-1 requires that mobile and stationary equipment be muffled and utilize best management practices for hauling activities and that stationary construction equipment be located away from noise-sensitive receptors. Mitigation Measure NOI-2 requires that a Noise Disturbance Coordinator be used to respond to and resolve complaints.

Existing daytime ambient noise levels are provided in Table 5.12-6 at locations representative of typical existing noise exposure along proposed conveyance system routes. As shown in Table 5.12-6, the ambient noise level along the routes ranged from approximately 61–70 dBA Leq based primarily on the roadway's traffic volumes. Therefore, there would be an increase of approximately 10 to 19 dBA Leq during pipe construction, depending on the roadway location. Since the pipelines would be installed over a few weeks (proceeding at an average rate of 150 feet per day) at any given location and would not be conducted at night time, noise impacts would be exempt from local noise ordinances and would be less than significant with mitigation.

Mitigation Measures:

Implement Mitigation Measures NOI-1 through NOI-3 for impacts to the ocean water desalination facility. Implement Mitigation Measures NOI-1 and NOI-2 for impacts to the desalinated water conveyance components. No mitigation measures are required for the screened ocean intake and concentrate discharge.

Local Project Significance Determination:

Significant and Unavoidable Impact for ocean water desalination facility; Less than Significant Impact for the screened ocean intake and concentrate discharge facilities; Less than Significant Impact with Mitigation Incorporated for the desalinated water conveyance components.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Operation of the desalination facility would generate noise from the treatment equipment as well as from increased human activity on the property involved with operating and maintaining the facility. All stationary mechanical equipment (e.g., pumps, generators) would be housed within enclosed structures, and therefore, noise generated by ocean water desalination facility operation would not result in temporary increases in ambient noise levels. Major ocean water desalination facility components, such as the RO system, would be fully enclosed in a building and thus would not generate operational noise levels that would expose persons to or generate noise levels in excess of applicable standards. Mitigation Measure NOI-4 would require that West Basin enclose all noise generating machinery to meet nighttime noise standards for residential uses.

Implementation of the Local Project would not result significantly increase traffic noise. Workers and deliveries entering the site would not substantially increase the noise levels. Furthermore, Mitigation Measure NOI-2 would provide for a 24-hour noise hotline and establish a Noise Disturbance Coordinator to resolve noise complaints that may arise from the local community. The Project would not result in temporary increases in ambient noise. Impacts would be less than significant.

Screened Ocean Intake and Concentrate Discharge

The ocean intake and discharge facility would be located underwater and would not generate noise. Impacts would be less than significant.

Desalinated Water Conveyance Components

The desalinated water conveyance facilities would be located underground and would not generate noise. The pump stations would be within enclosed structures but could generate noise in excess of nighttime standards. Mitigation Measure NOI-4 requires that pump stations be designed with acoustic treatments sufficient to control noise levels below exterior nighttime standards of the local ordinances. Implementation of Mitigation Measure NOI-4 would ensure nighttime noise standards are met. No temporary increase in ambient noise would occur. Impacts would be less than significant.

Mitigation Measures:

Implement Mitigation Measures NOI-2 and NOI-4 for the ocean water desalination facility. Implement Mitigation Measure NOI-4 for the desalinated water conveyance components. No mitigation measures are required for the screened ocean intake and concentrate discharge facilities.

Local Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Regional Project

Construction-Related Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Construction of the Regional Project would require approximately 36 months to complete. Construction noise would be similar to the Local Project, including the need for no pile driving. Mitigation Measures NOI-1 through NOI-3 would minimize temporary noise impacts during construction. However, even with implementation of all feasible mitigation, construction noise would temporarily increase ambient noise levels for an extended period of time. Impacts would be significant and unavoidable.

Screened Ocean Intake and Concentrate Discharge

Construction of the Regional Project offshore components would generate noise on the barges and underwater similar to the Local Project. The construction activities would not increase noise levels on the shore, at the beach, or at coastal residences. The noise would be masked by surf

noise. Construction of the Regional Project offshore components would result in less than significant noise impacts.

As with the Local Project, underwater noise could affect marine wildlife. Potential impacts of sound and acoustic pressure on marine species, such as behavioral avoidance of the construction area or injury, are discussed and evaluated in Section 5.11, *Marine Biological Resources*.

Desalinated Water Conveyance Components

Construction activities associated with the Regional Project desalinated water conveyance system would be similar to the Local Project. Pipeline installation would occur at approximately 150 feet per day. Noise generation would occur adjacent to any given property no more than a few weeks to a month as the linear pipeline is installed within the public ROW. Implementation of Mitigation Measures NOI-1 and NOI-2 would ensure Regional Project desalinated water conveyance components construction noise impacts are reduced to less than significant.

Construction equipment would include excavators, loaders, haul trucks, compaction equipment, water trucks, cranes, soil-sorting and screening equipment, shoring systems, paving equipment, and welding equipment. As shown in Table 5.12-13, this equipment would generate maximum noise levels of up to 89 dBA L_{max} at 50 feet, or average noise levels of approximately 80 dBA Leq at 50 feet. Sensitive receptors (i.e., residential uses, schools, places of worship, and parks) are located adjacent or within close proximity to the proposed pipeline alignments (within approximately 50 feet).

Existing daytime ambient noise levels are provided in Table 5.12-6 at locations representative of typical existing noise exposure within and immediately adjacent to the desalination facility site and proposed conveyance system routes, as shown in Figure 5.12-1. As shown in Table 5.12-6, the ambient noise level along the routes ranged from approximately 61 to 70 dBA Leq based primarily on the roadway's traffic volumes. Therefore, there would be an increase of approximately 10 to 19 dBA Leq during pipe construction, depending on the roadway location. Therefore, there is a potential to result in a substantial ambient increase where pipeline construction is occurring. However, since the pipelines would be installed over a few weeks at any given location and would not be conducted at night time, noise impacts would be exempt from local noise ordinances and would be less than significant with mitigation.

Mitigation Measures:

Implement Mitigation Measure NOI-1 through NOI-3 for impacts to the ocean water desalination facility. Implement Mitigation Measures NOI-1 and NOI-2 for impacts to the desalinated water conveyance components. No mitigation measures are required for the screened ocean intake and concentrate discharge facilities.

Regional Project Significance Determination:

Significant and Unavoidable Impact for ocean water desalination facility; Less than Significant Impact with Mitigation Incorporated for the desalinated water conveyance components; Less than Significant Impact for the screened ocean intake and concentrate discharge facilities.

Operational Impacts

Ocean Water Desalination Facility – ESGS North and South Sites

Operational noise impacts of the Regional Project would be similar to the Local Project. Mitigation Measure NOI-4 would require that any noise-generating equipment or activity be enclosed or otherwise attenuated to meet local noise standards identified in local noise ordinances. With implementation of Mitigation Measure NOI-4, temporary impacts to ambient noise levels would be less than significant.

Screened Ocean Intake and Concentrate Discharge

Similar to the Local Project, the Regional Project ocean intake and discharge facility would be underwater and would not generate noise. Impacts would be less than significant.

Desalinated Water Conveyance Components

Similar to the Local Project, the Regional Project desalinated water conveyance system would be underground and would not generate noise. The pump stations would be enclosed and subject to Mitigation Measure NOI-4 to ensure nighttime noise standards are met. Impacts would be less than significant.

Mitigation Measures:

Implement Mitigation Measures NOI-4 for the ocean water desalination facility and the desalinated water conveyance components. No mitigation measures are required for the screened ocean intake and concentrate discharge facilities.

Local Project Significance Determination:

Less than Significant Impact with Mitigation Incorporated.

Airport Noise

Impact NOI 5.12-5: For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects. **Table 5.12-17** summarizes the impact significance conclusions.

**TABLE 5.12-17
SUMMARY OF IMPACT NOI 5.12-5 EXPOSE PEOPLE RESIDING WITHIN AN AIRPORT LAND USE PLAN OR WITHIN 2 MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS**

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-5: Impacts on airport noise.			
Local Project			
Construction	NI	NI	NI
Operation	NI	NI	NI
Regional Project			
Construction	NI	NI	NI
Operation	NI	NI	NI
NOTES: NI = No Impact, no mitigation proposed			

Local and Regional Projects

Construction-Related and Operational Impacts

All Project Components

The Los Angeles County Airport Land Use Commissions (ALUC) prepared the Los Angeles County Airport Land Use Plan (ALUP) in 2004. The ALUP provides for the orderly expansion of Los Angeles County’s public use airports and the areas surrounding them. It is also intended to provide for the adoption of land use measures that will minimize the public’s exposure to excessive noise and safety hazards. In formulating the ALUP, the Los Angeles County ALUC established provisions for safety, noise insulation, and the regulation of building height within areas adjacent to each of the county’s public airports.

The ALUC adopted planning boundaries for each of the public use airports in Los Angeles County. The planning boundaries delineate areas subject to noise impacts and safety hazards (height restriction areas and approach surface and runway protection zones [RPZ]). The airport influence area maps illustrate the planning boundaries, RPZs, and 65 and 70 CNEL noise contours.

The proposed Project ocean water desalination facility site is located approximately 1.5 miles southwest of Los Angeles International Airport (LAX). According to the LAX Airport Influence Area Map (County of LA 2016a), the desalination facility site is not located within the LAX Planning Area Boundary/Airport Influence Area. The desalinated water conveyance pipelines would be below ground and outside of the LAX Planning Area Boundary and Airport Influence Area. Additionally, the ocean water desalination facility site is located approximately 5 miles west of Hawthorne Municipal Airport (HMA), also known as Jack Northrop Field. According to the HMA Airport Influence Area Map (County of LA 2016b), the Project site is not located within the HMA Planning Area Boundary or Airport Influence Area. The Project desalinated water conveyance components would be below ground/outside of the HMA Planning Area

Boundary or Airport Influence Area. Therefore, the Project would not result in an airport-related safety hazard for people working at or visiting the Project site. No impact would occur.

Mitigation Measures:

None Required.

Significance Determination:

No Impact.

Private Airstrip Noise

Impact NOI 5.12-6: For a Project located within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?

The following analysis evaluates potential impacts associated with constructing and operating each of the three primary elements of the Project, including offshore, coastal, and inland Project components for both the Local and Regional Projects. **Table 5.12-18** summarizes the impact significance conclusions.

**TABLE 5.12-18
SUMMARY OF IMPACT NOI 5.12-6 PRIVATE AIRSTRIP NOISE**

	Ocean Water Desalination Facility	Offshore Intake and Discharge Facilities	Inland Conveyance Facilities
Impact NOISE 5.12-6: Impacts on private airstrip noise.			
Local Project			
Construction	NI	NI	NI
Operation	NI	NI	NI
Regional Project			
Construction	NI	NI	NI
Operation	NI	NI	NI

NOTES:

NI = No Impact, no mitigation proposed

Local and Regional Projects

Construction-Related and Operational Impacts

All Project Components

The Project ocean water desalination facility site and desalinated water conveyance components sites are not proposed in the vicinity of a private airstrip. Therefore, the Project would not expose people working on the Project site to excessive noise levels associated with a private airstrip. No impact would occur.

Mitigation Measures:

None Required.

Significance Determination:

No Impact.

5.12.5 Cumulative Impacts

For purposes of noise impact analysis, cumulative impacts are considered for cumulative development according to the related projects; see Table 4-1. None of the cumulative projects are located in the vicinity of the ocean water desalination facility. Construction-related noise is a localized activity and would affect only land uses that are immediately adjacent to the construction areas because noise attenuates as it travels away from its source.

The cumulative projects outlined in Table 4-include hotels, housing developments, new schools, offices, and industrial uses. Industrial uses on-site and in the immediate vicinity (e.g., Chevron El Segundo Oil Refinery to the east) are noise-generating land uses that would combine with ocean water desalination facility construction equipment noise. Aircraft noise from LAX, traffic noise, and surf noise are dominant noise contributions to the cumulative noise setting. Cumulative projects and conditions generate short- and long-term noise that can in some cases exceed applicable city noise standards. The proposed Project would be required to comply with Mitigation Measures NOI-1 through NOI-4 to reduce construction and operational noise and vibration. Contractors at the job sites of any related cumulative projects would also be required to adhere to the applicable city's noise standards. The Project's contribution to the cumulative condition could be considerable even with implementation of mitigation measures since it could add to temporary ambient noise levels. The Project's significant and unavoidable construction-related noise impacts would add to the cumulative noise conditions.

The contribution of operational noise would be less than cumulatively considerable since the noise generated by the proposed facilities would comply with nighttime noise standards. Long-term stationary noise sources associated with the Project combined with other cumulative projects would not substantially increase local noise levels. Cumulative projects would be required to comply with the applicable city's noise level standards and include mitigation measures if these standards are exceeded.

5.12.6 Significant Unavoidable Impacts

Even after implementation of Mitigation Measures NOI-1 through NOI-4, Project construction would result in significant unavoidable noise impacts. Project vibration impacts would be reduced to less than significant with implementation of Mitigation Measure NOI-5. With implementation of Mitigation Measures NOI-2 and NOI-4, impacts from operation of the facilities would be less than significant.

5.12.7 Sources Cited

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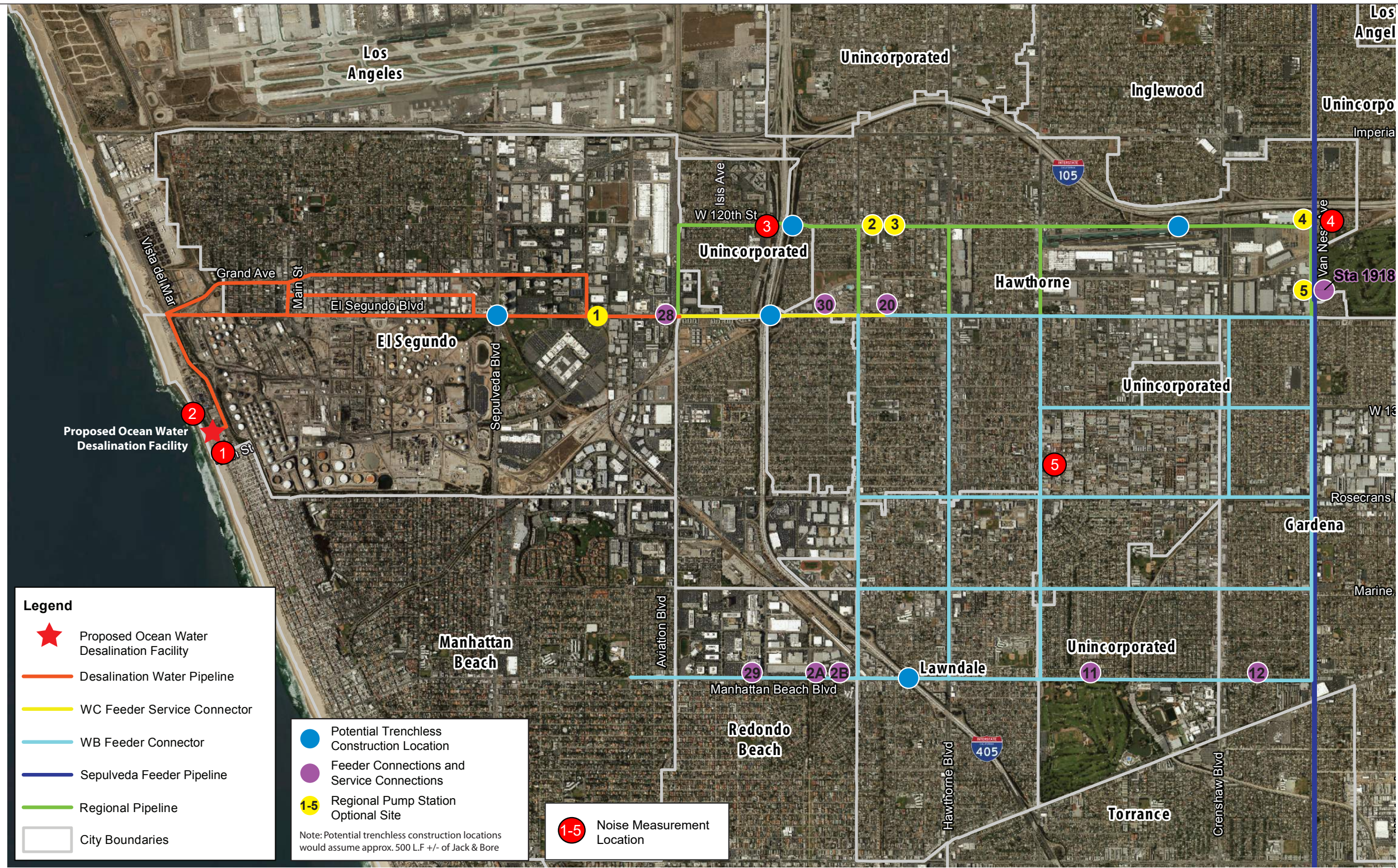
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Harris, Cyril M., 1979. *Handbook of Noise Control*, 1979.

Schomer and Associates, 2001. *A White Paper: Assessment of Noise Annoyance*, April 22, 2001.

U.S. Environmental Protection Agency (EPA), 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (E PA/ONAC 550/9-74-004)*, March 1974.



Legend

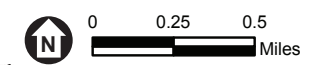
- Proposed Ocean Water Desalination Facility
- Desalination Water Pipeline
- WC Feeder Service Connector
- WB Feeder Connector
- Sepulveda Feeder Pipeline
- Regional Pipeline
- City Boundaries

- Potential Trenchless Construction Location
- Feeder Connections and Service Connections
- Regional Pump Station Optional Site

Note: Potential trenchless construction locations would assume approx. 500 L.F +/- of Jack & Bore

- Noise Measurement Location

Note: Pipeline alignments are preliminary, subject to change during final design and construction
 Aerial photo source: Eagle Aerial 2014



D:\170766.00 - West Basin MWD Ocean Desalination DEIR\05 Graphics-GIS-Modeling\Illustrator

SOURCE: Michael Baker International, 2016

West Basin Ocean Water Desalination Project

Figure 5.12-1
Noise Measurement Locations



