APPENDIX I

Noise Assessment Technical Report

NOISE ASSESSMENT TECHNICAL REPORT

for the

CARLSBAD DESALINATION PLANT PROJECT

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SUMMARY

This report contains our assessment of the noise associated with the Carlsbad Seawater Desalination project. Short-term noise impacts associated with the project would result from construction activities associated with on-site facilities, a new off-site supply water pipeline and off-site booster pump station. Long-term noise impacts would primarily result from mechanical equipment noise at the site and the off-site pump station.

In summary, the proposed short-term construction and long-term operational activities would not substantially increase the existing ambient noise levels at the adjoining property boundaries and the project noise levels would comply with the City of Carlsbad, City of Oceanside and City of Vista's noise criteria. Therefore, the proposed project improvements would result in a less than significant noise impact.

Mitigation measures will be required for the long-term operational noise impacts associated with the pump station. Mitigation will generally consist of a future noise study when building plans are available. The noise study may recommend mitigation measures such as installing sound absorbing materials on the interior walls and ceiling surfaces, providing acoustical louvers, orienting the louver openings, locating the pump station to minimize noise exposure to the adjacent properties.

1.0 BACKGROUND

1.1 Project Setting

The Carlsbad Seawater Desalination project is located in the City of Carlsbad (*Figures 1 and 2*). The project would consist of onsite and offsite elements. The onsite elements include a 50 million gallon per day desalination facility, as well as related facilities such as seawater supply pipeline, concentrate and waste disposal pipelines, finished water pipeline, electrical transformers and substation. Offsite project elements would include approximately six miles of 48-inch diameter pipeline and six miles of 30 to 36-inch diameter pipeline to carry the product water to the Cities of Carlsbad, Oceanside, Vista, San Marcos and neighboring water agencies, pump station(s) and a surge control facility (may be located onsite).

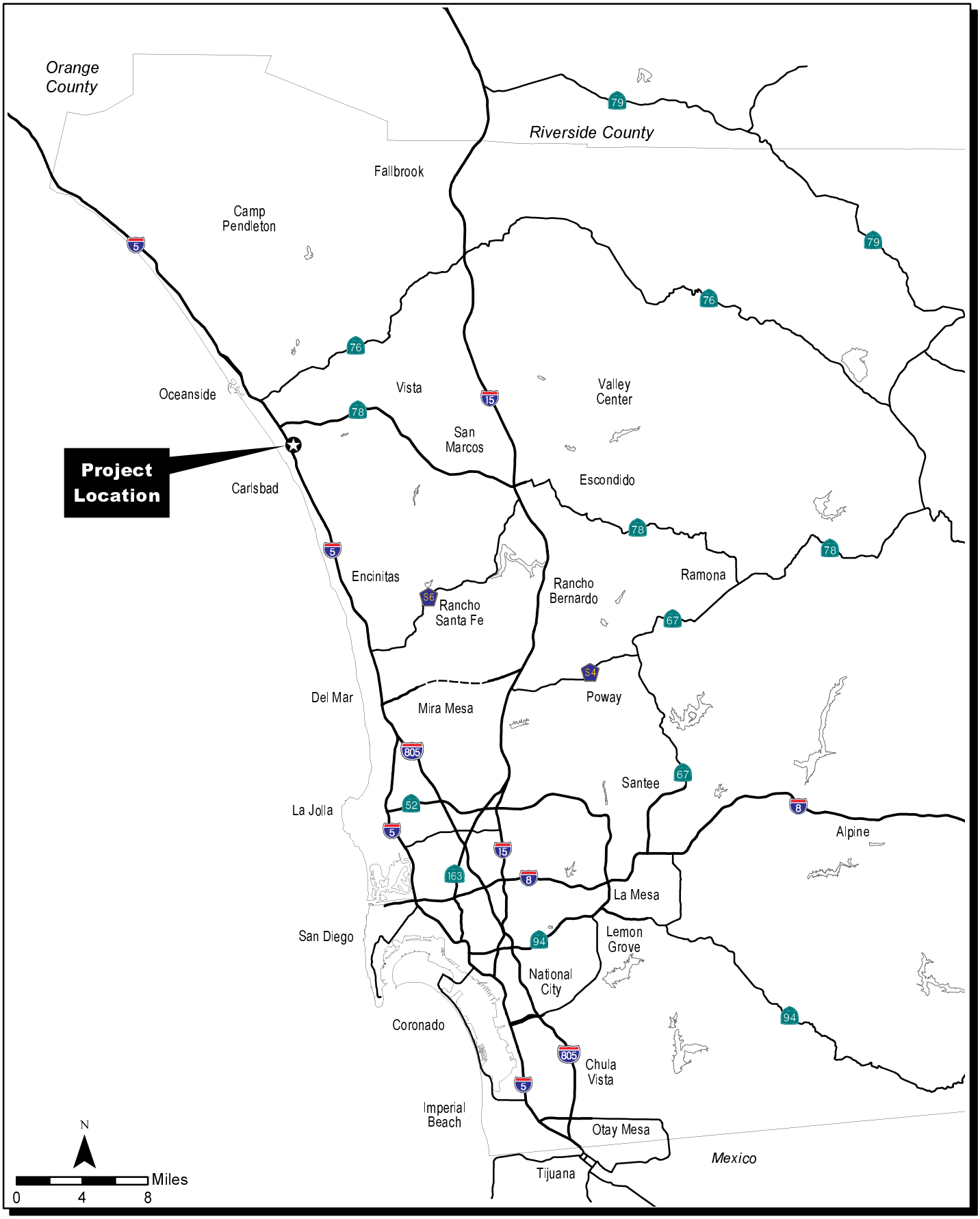
The existing noise environment varies considerably throughout the study area. The primary existing noise sources in the area include traffic, aircraft and trains. In addition, commercial and industrial activities generate noise in the area.

1.2 Methodology

Ambient noise measurements were conducted to quantify the existing daytime noise environment at ten sites. Noise levels resulting from the proposed construction activities have been obtained from reports prepared by the Environmental Protection Agency, Federal Transit Administration and field data from files. The assumptions regarding hours of construction activities, construction equipment, duration of construction activities etc. is based on information provided by the applicant. The noise impact assessment utilized criteria established in various noise ordinances and noise elements of the City of Carlsbad, City of Vista, City of San Marcos and City of Oceanside due to construction and operational noise.

1.3 Noise Background

Noise is defined as unwanted or undesired sound. Sound levels can be measured easily, but the variability in subjective and physical response to sound complicates the identification of noise impacts. The basic terminology and concepts of noise are described below. Technical terms are defined in *Attachment 1*.



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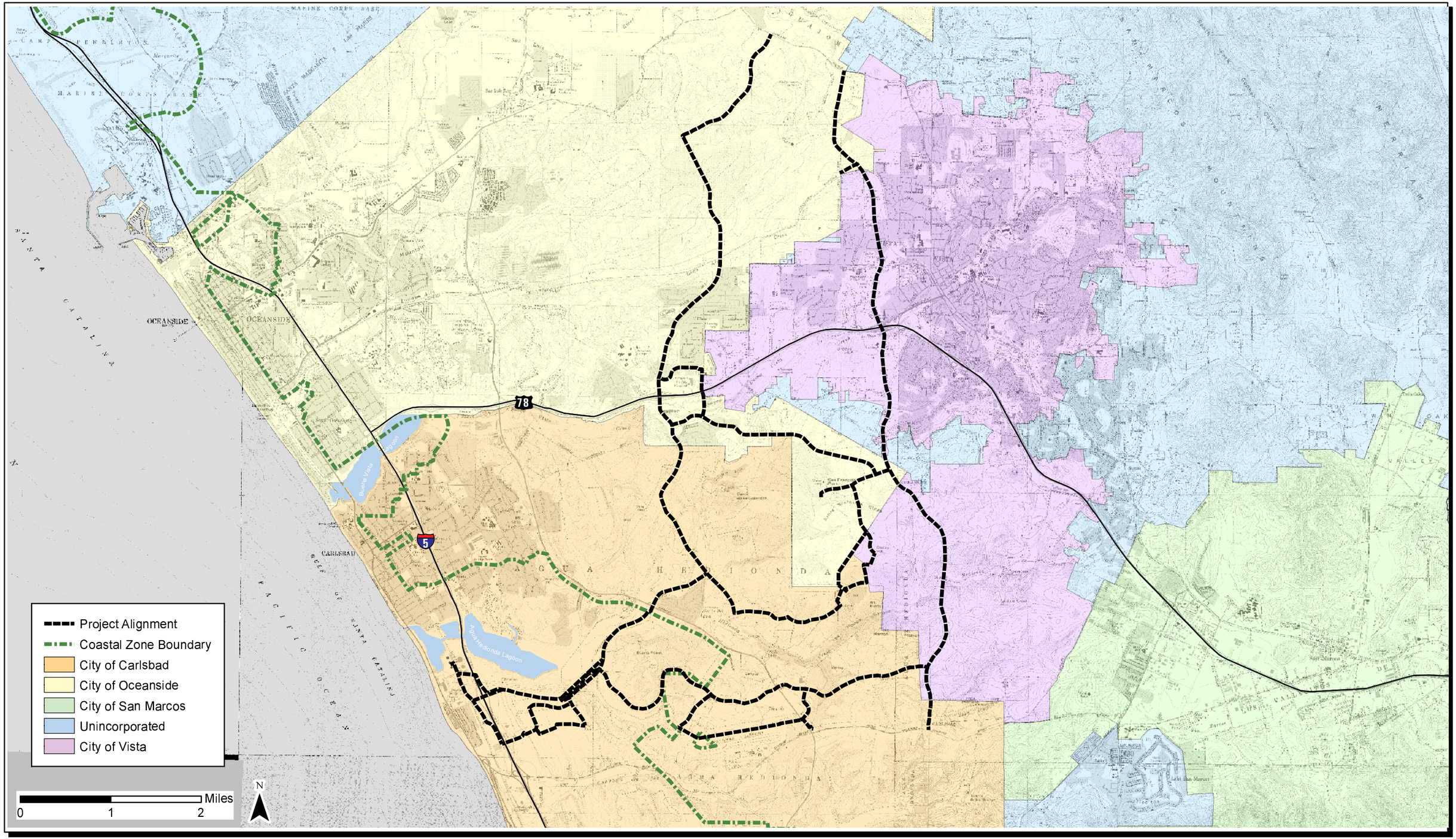
Regional Map

FIGURE 1



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Vicinity Map

FIGURE 2

Sound (noise) levels are quantified in terms of decibels (dB). Community noise levels are typically measured in terms of the A-weighted sound level (dBA). The A-weighted scale adjusts the measured sound levels to generally correspond with the way the human ear responds to sound. All sound levels discussed in this report are A-weighted.

Additional units of measurement have been developed to evaluate the long-term characteristics of sound. The equivalent sound level L_{eq}, also referred to as the average sound level, is a single number representing the fluctuating sound level in dB over a specified period of time.

Another noise descriptor used in community noise assessments is termed the Community Noise Equivalent Level (CNEL). The CNEL scale represents a time-weighted 24-hour average noise level. CNEL accounts for the increased noise sensitivity during the evening (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) by adding five and ten dBA, respectively, to the hourly average sound levels occurring during these hours.

1.4 Noise Criteria

The project site would be located within the City of Carlsbad. Offsite improvements would be located in the City of Carlsbad, City of Vista and City of Oceanside.

1.4.1 City of Carlsbad

The City of Carlsbad has established noise guidelines in the Noise Element of the City's General Plan (City of Carlsbad 1995). These limits are applicable for transportation noise sources. The noise guidelines identify compatible exterior noise levels for various land use types. Residential land uses are considered normally acceptable up to 60 dB CNEL. Commercial land uses are considered normally acceptable up to 65 dB CNEL and conditionally acceptable up to 75 dB. The City does not regulate by municipal code ordinance general nuisance noise such as that associated with stationary equipment located on private property. General industrial and utility uses are considered normally acceptable up to 70 dB CNEL and conditionally acceptable up to 80 dB CNEL.

The City of Carlsbad Municipal Code regulates construction noise by limiting the hours of operation (City of Carlsbad 2003). Construction activities are allowed to occur Monday through Friday between the hours of 7 a.m. to sunset; and on Saturdays from 8 a.m. to sunset, excluding legal holidays. The City does not have quantitative noise level limits (i.e., based on sound levels) for general nuisance noise such as that associated with stationary equipment located on private property.

1.4.2 City of Vista

The City of Vista regulates grading activity noise by limiting the hours of operation. Whenever a construction site is within 1,000 feet of any residential, hotel, motel, hospital or similar facility, grading activities shall be conducted between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday, and 8:00 a.m. to 4:00 p.m. on Saturday (City of Vista 1990).

1.4.3 City of Oceanside

City General Plan Noise Element Guidelines: The City has established noise guidelines in the Noise Element of the City's General Plan. These limits are applicable to transportation noise sources. The noise guidelines identify compatible exterior noise levels for various land use types. Residential uses are considered compatible with an exterior CNEL of up to 65 dB. Commercial and light industrial uses are not noise sensitive and the City does not have exterior noise standards for these uses.

Noise Ordinance Standards: Non-transportation noise sources are subject to the City's Noise Control standards (Municipal Code Chapter 38). The noise limits are in terms of a one-hour average sound level. The allowable noise limits depend upon the City's zoning district and time of day. The noise limits for various zones are depicted in *Table 1*. The sound level limit applies at any point on or beyond the boundary of the property on which the sound is produced. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two zones.

TABLE 1
MAXIMUM ALLOWABLE ONE-HOUR AVERAGE SOUND LEVEL

Zone	Time of Day 7:00 a.m. to 9:59 p.m.	Time of Day 10:00 p.m. to 6:59 a.m.
Residential (RE, RS, RM)	50 dB	45 dB
Residential (RH, RT)	55 dB	50 dB
Commercial	65 dB	60 dB
Industrial (I)	70 dB	65 dB
Downtown (D)	65 dB	55 dB
Agricultural (A)	50 dB	45 dB
Open Space (OS)	50 dB	45 dB

The City's Grading Ordinance (Ordinance No. 81-20) states that grading and equipment operations within 0.5-miles of a structure used for human occupancy can only be conducted Monday through Friday between the hours of 7:00 a.m. to 6:00 p.m. Further, the noise levels associated with any construction equipment should not exceed 85 dB at a distance of 100 feet (City of Oceanside 1974).

2.0 EXISTING CONDITIONS

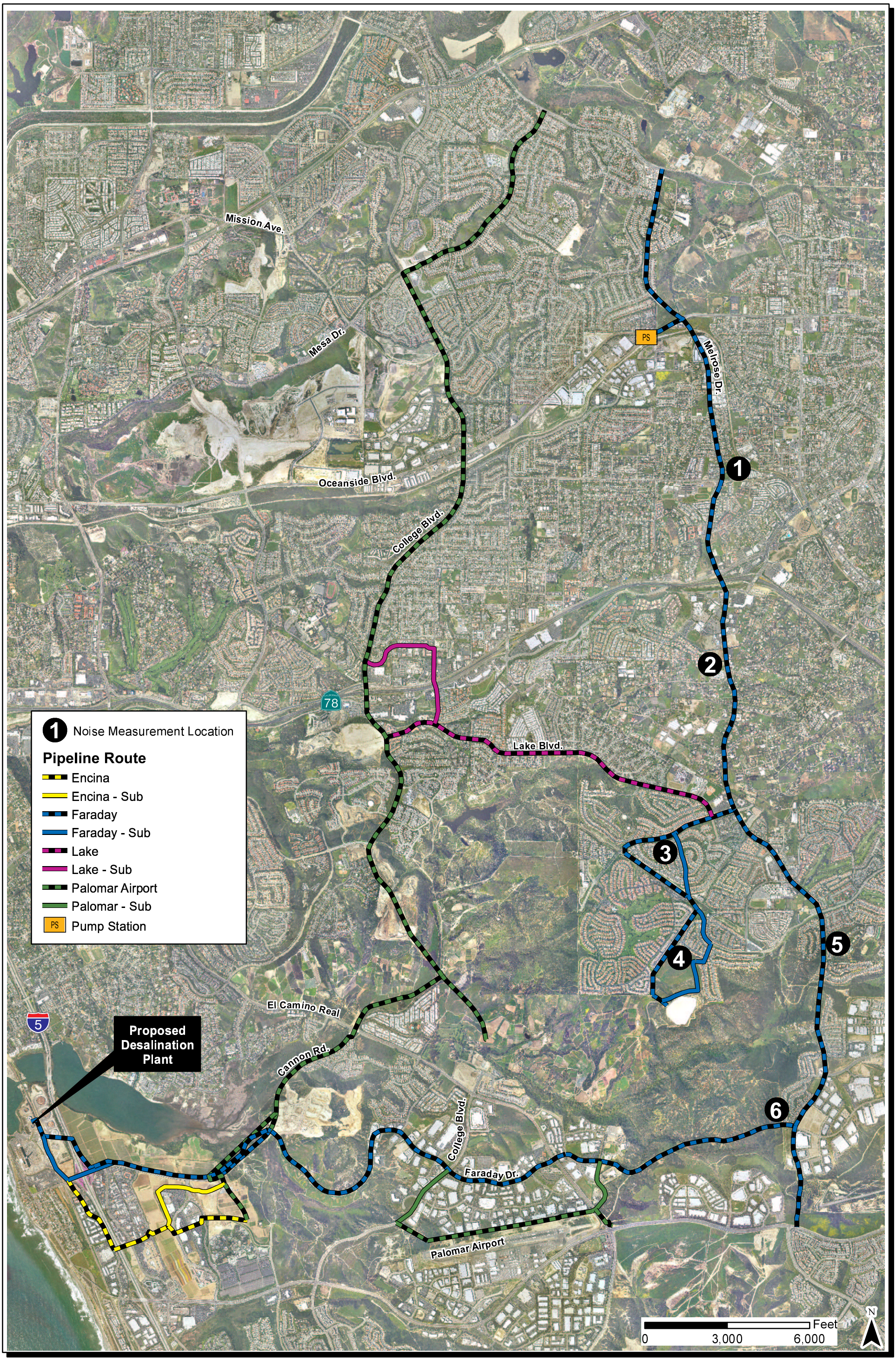
The existing noise environment varies widely throughout the alignment area, generally ranging from quiet uninhabited areas to urban residential. Major noise sources in the project area consist of vehicular traffic on local roadways, occasional aircraft flyovers, noise from students at schools, as well as noise associated with nearby industrial and commercial uses. The primary traffic noise sources in the area include Interstate 5, Melrose Drive, Carlsbad Boulevard and Cannon Road. Other noise sources include nearby local roads, aircraft flyovers from McClellan-Palomar Airport, as well as passenger and freight trains along the SDNR railway.

Land uses in the project vicinity vary widely and include single and multi-family residential, offices, business industrial parks, commercial, industrial, open space and parks.

Ambient Noise Monitoring

Noise measurements were conducted along the proposed program area to determine the approximate ambient daytime noise level. The noise measurements were conducted on June 16 and 17, 2004 and were made between the hours of 10:00 a.m. and 3:00 p.m. The measurements were made with a calibrated Larson-Davis Laboratories Model 700 (S.N. 2132) integrating sound level meter equipped with a Type 2551 ½-inch pre-polarized condenser microphone with pre-amplifier. When equipped with this microphone, the sound level meter meets the current American National Standards Institute standard for a Type 1 precision sound level meter. The sound level meter was positioned at a height of approximately five feet above the ground.

The noise measurement locations are depicted as Sites 1-6 on *Figure 3*. The measured average sound level varied from 41 to 68 dB. The greatest noise levels resulted at noise measurement sites that were exposed to traffic noise from Melrose Drive and Cannon Road. The lower noise levels were at sites where there was no traffic nearby or within residential areas such as Site 4 near Redwood Crest, or Site 6 at the terminus of Faraday Avenue. The noise measurement results are depicted in *Table 2*.



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Noise Measurement Locations

FIGURE 3

TABLE 2
MEASURED NOISE LEVELS

Site	Location	L_{eq} (dB)
1	Cedar Lane Park	67
2	Breeze Hill Park	68
3	Cannon Rd. and Wisteria Dr.	62
4	Along alignment near Redwood Crest	41
5	Melrose Dr., south of Shadowridge Dr.	66
6	Faraday Avenue, west of Brookhaven Pass	49

3.0 IMPACT ANALYSIS

The project would include three general components. Component 1 involves the construction of a desalination plant with an annual average flow capacity of 50 MGD. Component 2 consists of a new booster pump station. Component 3 consists of the installation of a new water supply pipeline.

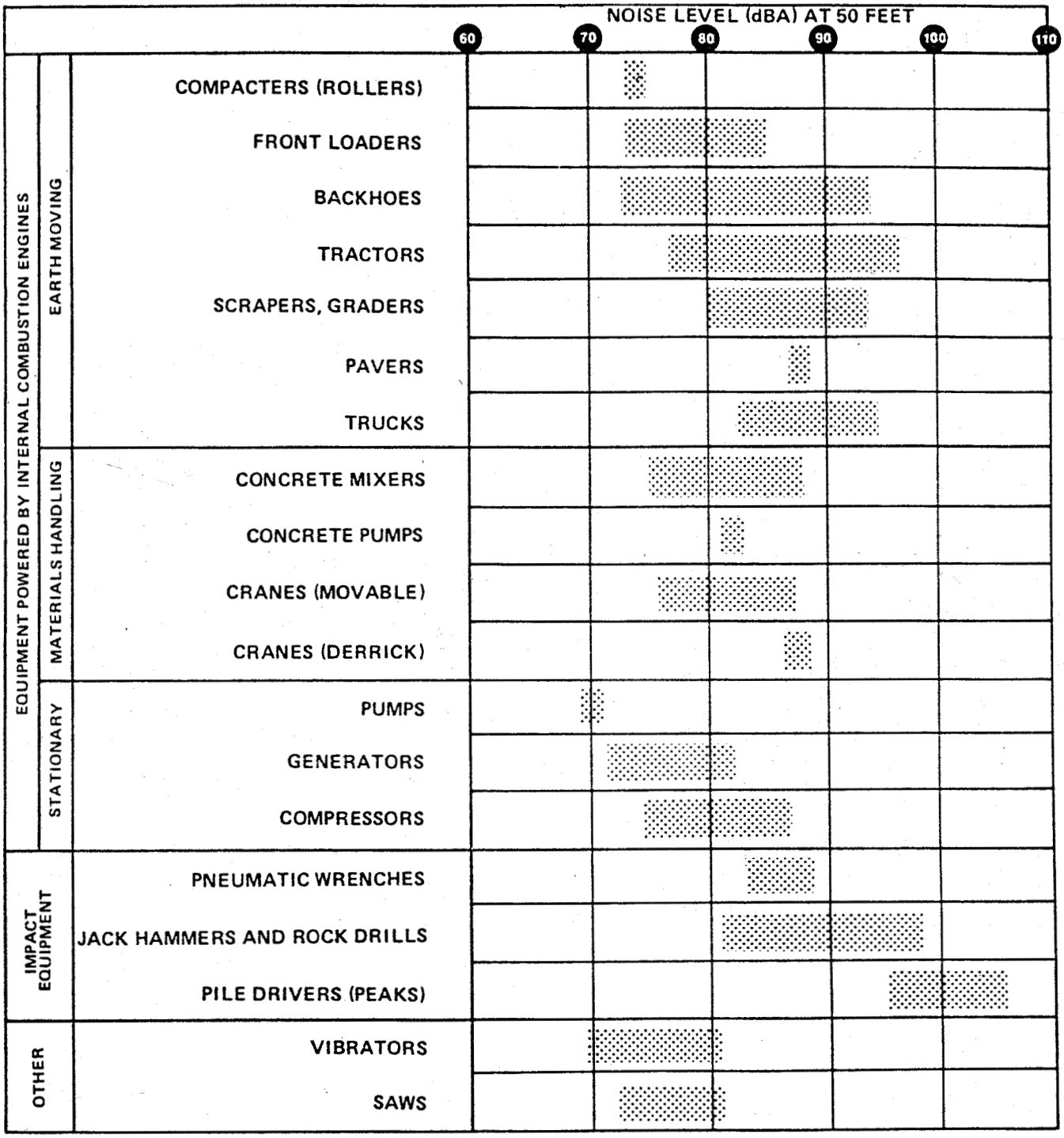
The project would include both short-term construction noise impacts as well as long-term operational noise.

3.1 Construction Noise and Vibration

Noise generated by construction equipment will occur with varying intensities and durations during the various phases of construction. The maximum noise level range for various pieces of construction equipment at a distance of 50 feet are depicted in *Figure 4*. Note that these are maximum noise levels. The equipment operates in alternating cycles of full power and low power, thus, producing noise levels less than the maximum level. The average sound level of the construction activity also depends upon the amount of time that the equipment operates and the intensity of the construction during the time period.

3.1.1 Desalinization Plant

The construction activities at the on-site facility would include the demolition of the on-site fuel storage tank, earthwork, building structures, trenching and pipe laying, paving and landscaping. The



NOTE: Based on limited available data samples.

SOURCE: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

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Typical Construction Equipment Noise Generation Levels

FIGURE 4

construction equipment would depend on the phase on construction. The greatest amount of equipment operating at the site would be during the earthwork and the building structure phases. Equipment would include approximately 3 excavators, 3 backhoes, 3 loaders, 2 graders and 2 compactors during the earthwork phase, and 3 cranes, 2 cement mixers, 4 forklifts, 1 aerial lift, 1 generator set and 4 welders when building the structures. Other types of equipment that would be used during different phases would include pumps, pavers, rollers, pile drivers, trenchers and a drill rig.

The closest residences would be located approximately 450 feet or more from the closest onsite ancillary facility construction area and more than approximately 1,800 from the proposed Desalinization Plant. At this distance the maximum noise level would be approximately 70 dB or less. All construction activity will be limited to the hours of 7 a.m. to 5 p.m. Monday through Friday. The construction noise would comply with the City's construction noise criteria.

Heavy trucks will be used to deliver materials to the site and remove soil and demolition materials. The number of heavy truck trips will vary considerably depending on the construction activity. The greatest number of trucks would occur during the desalination plant earthwork construction phase. The heavy trucks would generate approximately 6,700 trips over an approximate five month period. The haul routes are not known. However, in the vicinity of the site the heavy truck traffic could utilize Cannon Road and Carlsbad Boulevard.

Construction traffic noise levels were calculated using Caltrans SOUND32 traffic noise model (Caltrans 1983) with California vehicle noise emissions (Caltrans 1987). Assuming worst-case that all the heavy trucks are distributed along one road, the construction noise would generate a noise level of approximately 55 dB CNEL at a distance of 50 feet from the road. This noise level would result in a less than significant noise impact.

3.1.2 Water Supply Pipeline

The project would construct a new water supply pipeline extending from the project site easterly into the City of Vista and northerly into the City of Oceanside. Existing residences are located along portions of the proposed pipeline. Residents are generally located along the portion of the pipeline that would be in the City of Vista and City of Oceanside.

Methods of construction would include open trench and trenchless installations. Construction along the pipeline corridor would be carried out in several phases, each of which would utilize a unique mix of equipment and consequently would generate a unique mix of noise characteristics. Construction phases associated with the open-cut pipeline installing would include trenching, pipe laying, backfill/compacting and pavement reinstatement.

Based on a review of the preliminary construction equipment list (Carollo Engineers 2004), the primary noise sources would include excavators, backhoes, loaders, dump trucks, cranes, welders, crew and delivery trucks, water trucks, and roller compactors.

The majority of the pipeline construction near residences would be completed using open trench methods within roadway rights-of-way such as Melrose Drive and Cannon Road. These areas are generally subject to relatively high ambient noise levels due to existing traffic noise. Near Maerkle Reservoir, the pipeline construction would occur within a utility easement, undeveloped land or residential roads. These areas are within a relatively quiet area. The closest noise sensitive receivers are generally located adjacent to the pipeline utility corridor and residential roads within the Shadowridge community in Vista and Ocean Hills community in Oceanside. The residences would be approximately 40 to 50 feet from the proposed pipeline construction area. At this distance, the maximum noise levels would range up to approximately 85 dBA. The average sound level for an eight-hour work day would be expected to be substantially less because of the intermittent nature of construction work. Assuming a duty cycle time of ten percent, the average noise level would range up to approximately 75 dB. The duration to complete any phase of the open trench phases of the project such as trenching, backfilling, etc., will vary, but, would typically proceed at a rate of approximately 25 feet per day. Thus, the forward progression of construction activities would mean that the noise impact may last for only two to three days at any one location. The construction activities would comply with the local jurisdictions' noise ordinance for allowable hours and would result in a less than significant noise impact.

Trenchless methods would be used at several areas. Three types of trenchless methods consisting of microtunneling, horizontal directional drilling and auger boring may be used. Microtunneling generally involves excavating an entry pit and receiving pit. Next, a microtunneling machine starts from the entry pit and the machine and pipe segments are jacked forward by a hydraulic jack to the receiving pit. Horizontal directional drilling is a two-stage process that consists of drilling a small diameter pilot directional hole and then developing the pilot hole into a suitable sized bore hole that will accommodate the new pipe. The pipe is pulled back into place. Auger boring forms a bore hole between shafts by means of a rotating cutting head. Auger boring is typically a two-stage process: the pipe casing is jacked in place and the water pipe is installed inside the casing. The annular space between the pipe and casing is filled with grout.

Noise impacts associated with trenchless operations are similar to open trench pipeline construction. However, rather than the construction noise progressing linearly, the noise would be confined to the excavated pits. Thus, noise impacts could last for several weeks rather than a few days at the areas adjacent to the pits. Trenchless equipment would most likely include a microtunneling machine,

auger/drill, a crane, front end loader, ventilation fans, air compressor, pumps, and dump trucks. Excavating the pits would generally be the most intense noise source. Thereafter, the noise impact would be less intense, but, a persistent noise source.

The trenchless methods would generally be limited to areas adjacent to major road crossings, railroad crossings, utility crossing and creek crossings. There are several areas where trenchless methods would be used near noise sensitive receptors (approximately 50 feet from existing residences in these locations). The locations are: **(1)** the area at the bridge on Melrose Drive and Agua Hedionda Creek in the City of Vista, **(2)** the area along Cannon Road just west of El Camino Real, **(3)** on Cannon Road near Faraday Avenue, **(4)** College Boulevard and AT&SF Railroad, and **(5)** Hwy 78 crossing at Thunder Road. The closest residence in any of these locations would be located approximately 50 feet from a receiving pit.

Noise will be generated primarily during the excavation of the launch and receiving pits. The closest residences have existing sound walls that attenuate noise from the roadway, and would serve to also attenuate construction noise. It is not anticipated that the construction noise would exceed the existing ambient traffic noise in these locations. In addition, the construction noise would be restricted based on the requirements of the local jurisdiction relative to construction noise and would therefore not exceed established standards. Therefore, the noise impact is not anticipated to be significant.

Heavy trucks would be used to deliver materials along the pipeline corridor and remove soil. The number of on-site heavy truck trips the project would vary depending on the construction activity, however the heavy truck traffic would be an average of approximately 216 ADT. There are several potential haul routes including Melrose Drive, North Santa Fe Avenue, El Camino Real, Cannon Road and Faraday Avenue. The number of trucks on a haul route are not known. However, assuming worst-case that all the heavy trucks are distributed along one road, the construction noise would generate a noise level of approximately 59 dB CNEL at a distance of 50 feet from the road. This noise level would result in a less than significant noise impact.

3.1.3 Booster Pump Station

A pump station would be located approximately 1,000 feet west of the intersection of Oceanside Boulevard and Melrose Drive in the vicinity of the City of Oceanside's equipment yard. Multi-family residences are located on the north side of Oceanside Boulevard.

Construction equipment is expected to consist of a forklift, excavator, compactor, backhoe, crane, water truck and two concrete trucks. The closest residences to the pump station site would be located approximately 180 or more feet from the site. The maximum noise levels would be approximately 75 dBA or less at the closest residence. The construction activities would comply with the City of Oceanside's noise criteria and would result in a less than significant noise impact.

3.2 On-Site Operational Noise

The project would construct several facilities at the site including a building for a reverse osmosis process area, a product water pump station and a pretreatment filter structure. The facilities would contain mechanical equipment that would generate noise. A preliminary facility design and mechanical equipment list has been prepared (Poseidon Resources 2004). The noise levels are calculated using the maximum sound levels anticipated for the equipment based on the type and size of the equipment (Poseidon Resources 2004).

3.2.1 Intake Pump Station

A water intake pump station would be located near the southwestern corner of the power plant. The pump station structure would consist of microscreens and pump wet well. The intake station would include three duty and one standby vertical turbine pumps. All the pumps would be rated at approximately 750 HP and would be installed along with auxiliary equipment outdoors on a concrete slab in a wet well structure approximately 30 feet below the grade of Carlsbad Boulevard. The pumps/motors would have a maximum sound level rating of 90 dBA at three feet.

The closest existing residence to the intake pump station would be located approximately 450 feet southwesterly from the pump station across Carlsbad Boulevard. There would be intervening topography that would block the line-of-sight to the residence. With all the equipment operating the noise level would be approximately 31 dB.

3.2.2 Pretreatment Filter Structure

The pretreatment facility would include filter service equipment (backwash blowers and pumps) and filtered effluent transfer pumps. The mechanical equipment would include two 150-HP centrifugal blowers and two 180-HP vertical turbine pumps. All the equipment would be located inside the reverse osmosis building discussed in *Section 3.2.8*. The maximum noise level of all the pumps and blowers would be 88 dB at three feet.

3.2.3 Product Water Pump Station

The water pump station would include five vertical turbine pumps (four duty and one standby) equipped with 550-HP motors. The water pumps and their auxiliary equipment would be located in the reverse osmosis building discussed in *Section 3.2.8.* The maximum noise level of all the pumps would be 88 dB at a distance of three feet.

3.2.4 Membrane Cleaning System

The membrane cleaning system would include membrane cleaning pumps (three 80-HP duty and one standby), storage tank mixing blowers (one 50-HP duty and one standby), flush pumps (two 150-HP duty and one standby), mechanical mixers (1-HP motor), and sewer system transfer pumps (one 25-HP duty and one standby). All the equipment would be located inside the membrane cleaning room of the reverse osmosis building discussed in *Section 3.2.8*. The maximum noise level of all the pumps, blowers and equipment would be 88 dB at three feet.

3.2.5 Chemical Feed Equipment

The chemical feed facility would include mixers and chemical feed pumps. The mechanical equipment would include 15 duty and 7 standby pumps/motors ranging from 30 to 150-HP. The chemical day tanks and the pumps for all chemical feed systems would be located in the chemical feed room of the reverse osmosis building discussed in *Section 3.2.8.* The maximum noise level of all the pumps and other equipment would be 88 dB at three feet.

3.2.6 Service Facilities

Service facilities for the desalination plant would include miscellaneous small service equipment such as sump pumps, storm drain pumps as well as a Heating, Ventilation and Air Conditioning (HVAC) system for the reverse osmosis building. The equipment, other than some of the HVAC equipment, would be located inside the reverse osmosis building. The maximum noise level of all the pumps and other equipment would be 88 dB at three feet.

3.2.7 Solids Handling Equipment

Under a worst-case scenario, the solids removed from the source seawater during the pretreatment process will be settled and dewatered on site in a solids handling system. The equipment would consist of four sludge removal 50-HP pumps (two duty and two standby) located outdoors, adjacent to the settling tanks. Two 150-HP belt presses, two 2-HP clarifier sludge collection mechanisms, two

10-HP sludge chemical conditioning system and two 60-HP sludge conveyors will be located inside the solids handling area. The maximum noise level of all pumps and other equipment would be 88 dB at three feet. The equipment would be located at the reverse osmosis process area.

3.2.8 Reverse Osmosis Process Area

The reverse osmosis process area would be located inside a cast-in-place concrete and steel construction building. A preliminary design plan indicates that building would include roll up doors, entry doors, louvers, and windows.

The building would house noise generating equipment including 13 high pressure reverse osmosis vertical turbine pumps (up to 3,500 HP with one standby), 13 filter effluent transfer pumps (350-HP with one standby), 13 energy recovery turbines (with one standby), five product transfer pumps (see *Section 3.2.3*), two centrifugal backwash blowers and two filter backwash pumps (See *Section 3.2.2*). The high pressure reverse osmosis pumps and energy recovery turbines would have a maximum sound rating of 90 dB at three feet. The remaining pump/motors would have a maximum sound level rating of 88 dB at three feet. Additional equipment that would be located in the Reverse Osmosis area has been previously identified in *Sections 3.2.2, 3.2.3, 3.2.4 and 3.2.5.*

There are no nearby residences. The closest existing residence to the revers osmosis process area would be located approximately 1,850 feet southwesterly from the pump station across Carlsbad Boulevard. There would be intervening buildings that would block the line-of-sight to the residence. With all the equipment operating the noise level would be less than 30 dB CNEL at the closest residence. This noise level would result in a less than significant noise impact.

3.2.9 Combined Equipment Noise

The noise sources described in the preceding sections would generate an unmitigated noise level approximately 58 dB CNEL at the closest residential property. When including noise attenuation provided by intervening structures as well as the proposed on-site structures the noise level would be less than approximately 35 dB CNEL at the closest residential property. Implementation of the proposed project is not anticipated to substantially increase the ambient noise level at the closest residences or generate noise levels in excess of the City's noise criteria. Thus, the operational noise impact is considered less than significant.

3.3 Off-Site Booster Pump Station

A booster pump station would be located approximately 1,000 feet west of the intersection of Oceanside Boulevard and Melrose Drive. There would be four duty and one standby vertical-turbine pumps with 150-HP motors. The maximum sound level rating for the pumps would be 90 dB at a distance of three feet. The pumps would be installed inside a concrete building. The block building would attenuate. However, the level of noise attenuation will depend on the design of any air duct work, sound attenuators, louvers, and doors among other building features.

The property boundary of the closest existing residences are located approximately 180 feet north of the pump station across Oceanside Boulevard. The proposed pump station site is zoned limited industrial (IL). The closest residential property is zoned high density residential (RH). The applicable noise level limits at the residential property are that the hourly average sound level shall not exceed 62.5 dB between the hours of 7:00 a.m. to 9:59 p.m., and 57.5 dB between the hours of 10:00 p.m. to 6:59 a.m. Assuming worst-case that standard louver openings would face to the north, the mechanical equipment noise associated with the pump station would reach approximately 50 dB at the residential property boundary. This noise level would not exceed the City's noise criteria. Therefore, the noise impact would be less than significant.

3.4 Truck Traffic and Employee Traffic During Plant Operations

The plant will require heavy truck deliveries of chemicals, disposal of waste solids, solid residuals, and supply of equipment and spare parts. It is anticipated that 12 truck loads of chemicals, one truck load of waste solids and up to three truck trips for solid residuals disposal (i.e., a total of approximately 34 truck trips) would be required each week. In addition, the desalination plant would have an approximately eight employees on-site working regular day shift hours on weekdays. There would be less employees during the nights and on weekends. The noise generated by the truck traffic and employees would be minimal and the noise impact would be less than significant.

3.5 Vibration

Construction activities such as blasting, pile driving, demolition, excavation or drilling have the potential to generate ground vibrations near structures. These activities are not proposed to be conducted in close proximity to sensitive structures. Therefore, the equipment used for construction would not generate significant vibration levels.

4.0 MITIGATION

The proposed project improvements would not generate short-term on long-term noise impacts in excess of the local jurisdictions's noise criteria. Therefore, the proposed project improvements would result in a less than significant noise impact.

5.0 REFERENCES

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Federal Transit Administration (FTA), April, 1995. *Transit Noise and Vibration Impact Assessment.*

Poseidon Resources, July 2004. *Carlsbad Seawater Desalination Project Description of Plant Energy Use and Equipment Power Requirements.*

San Diego, County of, February 2000. *San Diego County Code of Regulatory Ordinances Chapter 4, Noise Abatement and Control (as amended January 2, 2004).*

San Diego, County of, December 17, 1980. *Noise Element San Diego County General Plan.*

City of Vista, 1990. City of Vista Development Code 1990 Chapter 17.56 (as amended 2003).

ATTACHMENT 1
DEFINITIONS

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level, CNEL	CNEL is the A-weighted equivalent continuous sound exposure level for a 24-hour period with a ten dB adjustment added to sound levels occurring during nighttime hours (10 pm to 7 am) and a five dB adjustment added to the sound levels occurring during the evening hours (7pm to 10 pm).
Decibel, dB	A unit for measuring sound pressure level and is equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micropascals.
Equivalent Continuous Sound Level (L_{eq})	The sound level corresponding to a steady state sound level containing the same total energy as a varying signal over a given sample period. L_{eq} is designed to average all of the loud and quiet sound levels occurring over a time period.
Maximum A-weighted Sound Level, (L_{max})	The greatest sound level measured on a sound level (L_{max}) meter during a designated time interval or event using fast time-averaging and A-weighting.
Sound Transmission Class, STC	A single number rating of the noise reduction of a building element.