NOISE IMPACT ANALYSIS

DANA POINT HARBOR MARINA IMPROVEMENT PROJECT

DANA POINT, CALIFORNIA

LSA

June 2010

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TABLE OF CONTENTS

FIGURES AND TABLES

FIGURES

TABLES

DANA POINT HARBOR

INTRODUCTION

This noise impact analysis has been prepared to evaluate the potential noise impacts and mitigation measures associated with the Marina Improvement Project in the City of Dana Point (City), California. The Dana Point Harbor facilities are owned by the County of Orange (County) and operated under the direction of the Orange County Dana Point Harbor (OC DPH), a County agency. This analysis is intended to satisfy the County's requirement for a Project specific noise impact analysis by examining the impacts of the Marina Improvement Project on noise-sensitive uses in the Project area.

PROJECT DESCRIPTION

Dana Point Harbor, constructed between 1966 and 1970, is located in the City of Dana Point, Orange County, California about 40 miles (mi) south of Long Beach/Los Angeles Harbors (Figure 1). It lies in the lee (protected side) of Dana Point Headlands within Capistrano Bay and is also protected by a 1.7 mi long and 14- to 18-foot (ft) high breakwater. Harbor channel widths vary from 350 ft in the anchorage areas to 600 ft at the Harbor entrance (Wiegel 1993). The Harbor is subject to in-filling of sands that migrate through the quarry rock-breakwater requiring periodic maintenance dredging to maintain safe water depths. The Marina within Dana Point Harbor is divided into two basins, the East Basin and West Basin (Figure 2). Each basin operates as a separate Marina, with a total capacity of about 2,400 shallow-draft vessels. The boat launch ramp at the northeast corner of the Harbor is newly upgraded as of July 2007. Other facilities within the Harbor include the Dana Point Marine Institute, a dry boat storage hoist, fishing pier, shipyard, marine fuel dock, three yacht clubs, and a commercial sports fishing operation. Swimming is allowed at the west end of the Harbor at Baby Beach.[1]

PROPOSED PROJECT COMPONENTS

The proposed Dana Point Harbor Marina Improvement Project includes replacement of docks and slip facilities in the West and East Marinas, connection of dock gangways with the quay wall and bulkheads within those basins, and replacement of gangways and security gates to both Marina areas. Additionally, new Dry Stack Storage Staging docks and dinghy docks, along with renovations to the Marine Services docks, Orange County Sailing and Event Center docks, guest docks, Harbor Patrol docks, commercial fishing docks, and sport fishing docks are included in the proposed Project. In order to accommodate displaced boats during Project implementation, a temporary dock near the breakwater next to Doheny State Beach is included in the Project (Figure 3). The number of boat slips will decrease from 2,409 to 2,293. A total of 1,306 existing piles will be removed and approximately 969 new piles will be emplaced. In addition, the proposed Marina Improvement Project includes the addition of Americans with Disabilities Act (ADA) access at gangway locations where it currently is

[1] http://www.ocparks.com/danapointharbor.

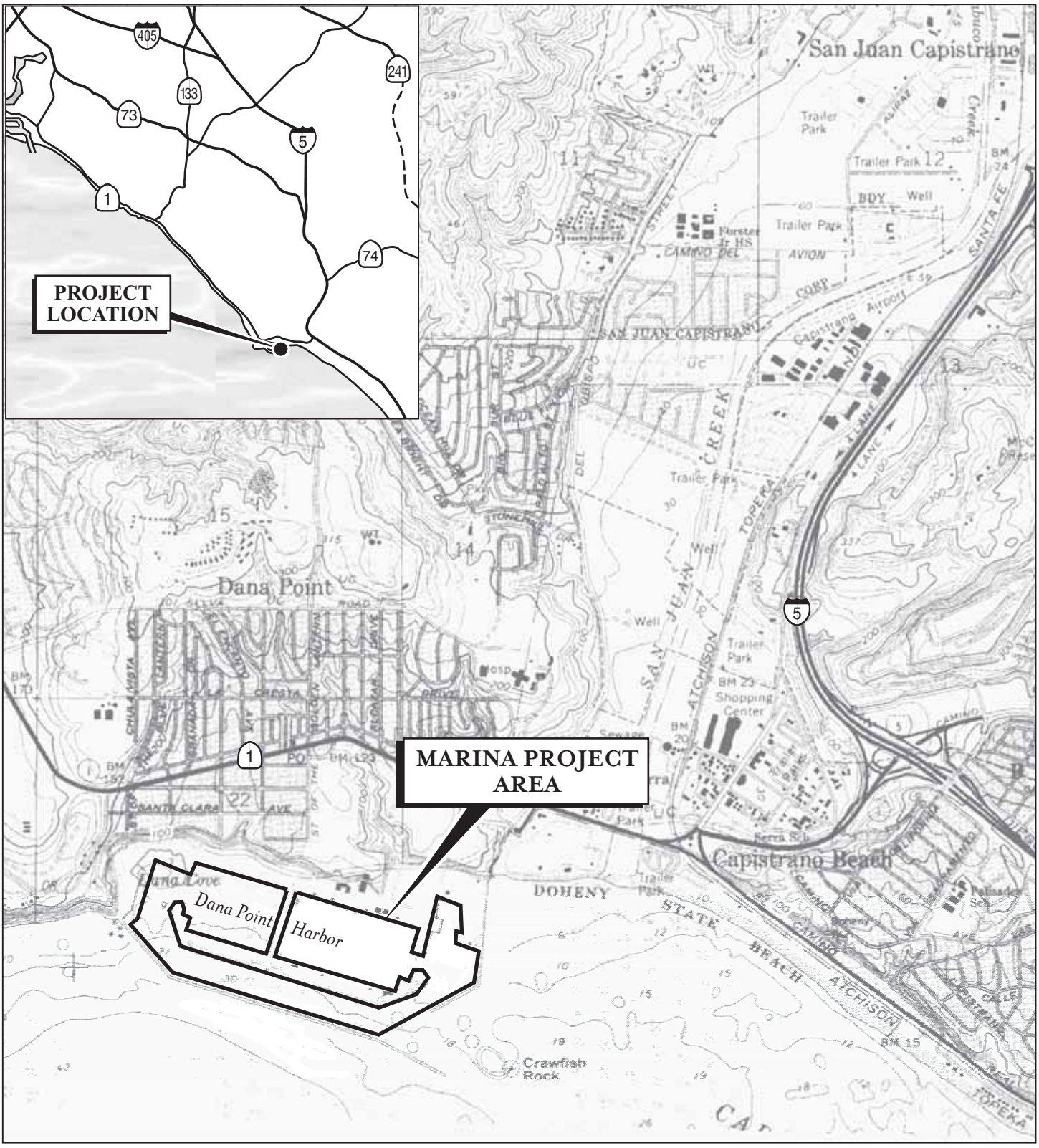

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FIGURE 1

SOURCE: USGS 7.5' Quadrangle, "Dana Point, Calif."

Dana Point Harbor Marina Improvement Project

Project Location

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FIGURE 2

Dana Point Harbor Marina Improvement Project

Existing Harbor Layout

SOURCE: URS/Cash & Associates

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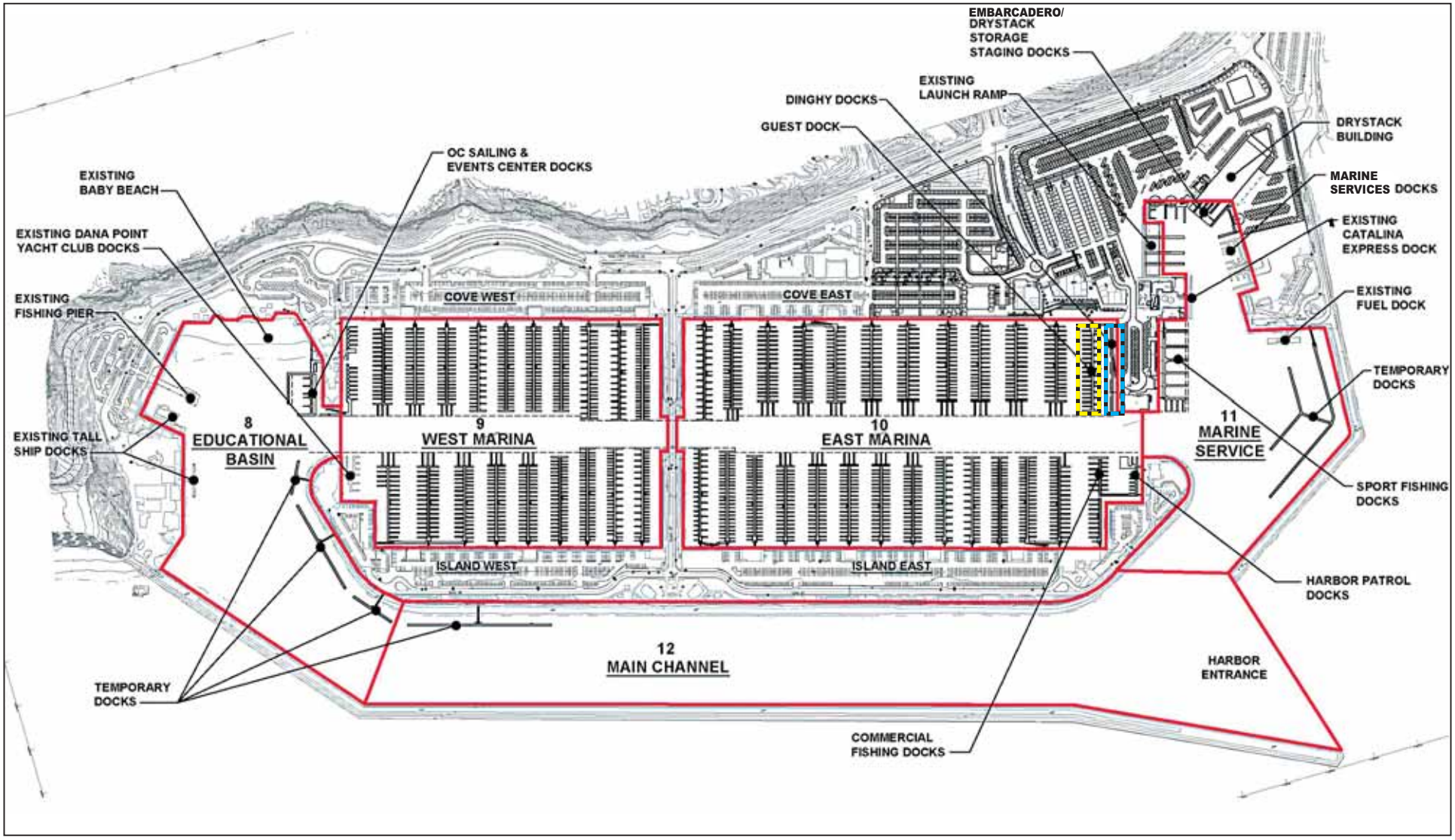

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FIGURE 3

LEGEND

- **Marina Improvement Project Area**
- **Dinghy Docks**
- **Guest Dock**

NOTE: Landslide areas are shown in accordance with the Dana Point Harbor Revitalization Plan and District Regulations Land Use Plan.

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0 300 600

FEET

SOURCE: URS Corp.

Dana Point Harbor Marina Improvement Project

Proposed Harbor Layout

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not available. This report specifically addresses waterside, or Marina, improvements to the Dana Point Harbor.

METHODOLOGY RELATED TO NOISE IMPACT ASSESSMENT

Evaluation of noise impacts associated with a proposed Project typically includes the following:

- Determine the noise impacts associated with short-term construction of the proposed Project on adjacent uses; and
- Determine the long-term noise impacts on off-site noise sensitive uses; and
- Determine the required mitigation measures to reduce short-term and long-term noise impacts.

As described above, although the Dana Point Harbor facilities are owned by the County of Orange and operated under the direction of OC DPH, a County agency, the Harbor is located entirely within the City. Therefore, this noise impact analysis utilizes both the County's and the City's noise standards, including the Noise Elements and Municipal Codes, as thresholds against which potential noise impacts are evaluated.

CHARACTERISTICS OF SOUND

Sound is increasing to such disagreeable levels in the environment that it can threaten quality of life. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a Project defines the noise environment of the Project area in terms of sound intensity and its effect on adjacent sensitive land uses.

MEASUREMENT OF SOUND

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units, such as inches or pounds, decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) are 10 times more intense than 1 dB, 20 dB are 100 times more intense, and 30 dB are 1,000 times more intense. Thirty dB represent 1,000 times as much acoustic

energy as one decibel. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source, such as highway traffic or railroad operations, the sound decreases 3 dB for each doubling of distance in a hard site environment. Line source, noise in a relatively flat environment with absorptive vegetation, decreases 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and 10 dBA weighting factor applied to noise occurring from 10:00 p.m.–7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally exchangeable. The City uses the CNEL noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L10 noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first is audible impacts that refer to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1.0 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

PHYSIOLOGICAL EFFECTS OF NOISE

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160–165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas.

Table A lists "Definitions of Acoustical Terms," and Table B shows "Common Sound Levels and Their Sources." Table C shows "Land Use Compatibility for Exterior Community Noise" recommended by the California Department of Health, Office of Noise Control.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. 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. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control 1991.

Table B: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing
	0	Very Faint	

Source: Compiled by LSA Associates, Inc. 1998.

Table C: Land Use Compatibility for Exterior Community Noise

Land Use Category	Noise Range (L_{dn} or CNEL), dB			
	I	II	III	IV
Passively used open spaces	50	50–55	55–70	70+
Auditoriums, concert halls, amphitheaters	45–50	50–65	65–70	70+
Residential: low-density single-family, duplex, mobile homes	50–55	55–70	70–75	75+
Residential: multifamily	50–60	60–70	70–75	75+
Transient lodging: motels, hotels	50–60	60–70	70–80	80+
Schools, libraries, churches, hospitals, nursing homes	50–60	60–70	70–80	80+
Actively used open spaces: playgrounds, neighborhood parks	50–67	—	67–73	73+
Golf courses, riding stables, water recreation, cemeteries	50–70	—	70–80	80+
Office buildings, business commercial and professional	50–67	67–75	75+	—
Industrial, manufacturing, utilities, agriculture	50–70	70–75	75+	—

Source: Office of Noise Control, California Department of Health 1976.

Noise Range I—Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Noise Range II—Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Noise Range III—Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Noise Range IV—Clearly Unacceptable: New construction or development should generally not be undertaken.

VIBRATION

Vibration energy propagates from a source through intervening soil and rock layers, to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by the occupants as motion of building surfaces, rattling of items on shelves or hanging on walls, or a low-frequency rumbling noise. The rumble noise is caused by the vibrating walls, floors, and ceilings radiating sound waves. Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (rms) velocity or peak particle velocity (PPV). Rms is best for characterizing human response to building vibration and PPV is used to characterize potential for damage. Ground vibrations from construction activities, including those within water bodies such as pile driving for pile installation, do not often reach the levels that can damage structures, but they can achieve the audible and feelable ranges in buildings very close to the site. Ground-borne vibration from construction sources, such as the pile installation in the Marina, is usually localized to areas within about 100 ft from the vibration source.

EXISTING CONDITIONS

Sensitive Land Uses in the Project Vicinity

There are residential, commercial, recreational and hotel uses currently surrounding the Project site. The existing residential uses (including the live-aboards within the Marinas) and the Dana Point Marina Inn are the closest noise-sensitive uses and would be potentially affected by noise from the Project site during construction.

Overview of the Existing Noise Environment

The primary existing sources of noise within the Project area are generated by vehicle activities within the parking lots, boat noise within the Marina, and vehicle traffic.

Thresholds of Significance

Based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines, the following thresholds were used to assess the significance of potential noise impacts associated with the construction and operation of the proposed Project:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels
- A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project

This noise impact analysis considered both County and City noise standards, including their General Plan Noise Elements and Zoning Code standards, as thresholds against which potential Project noise impacts were evaluated. The County and City have the same noise standards for sensitive land uses and the same regulations regarding noise generated from construction activities.

County of Orange Noise Standards

Noise Element of the General Plan and Municipal Code. The Noise Element of the County of Orange General Plan and the Codified Ordinances of the County of Orange establish noise criteria to ensure that high noise levels do not adversely affect the quality of life of County residents. The noise criteria are based on land use compatibility. Table D provides the County's exterior and interior noise standards for sensitive land use areas. However, Section 4-6-7 of the County's Noise Ordinance provides exemptions to the County's noise standards for specific activities, such as construction. The Ordinance states that noise sources associated with construction, repair, remodeling, or grading of any real property are exempt from the noise standards provided that the construction activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, Saturdays, or at any time on Sundays or a federal holiday.

Table D: County of Orange Noise Standards for Residential Land Uses

Maximum Noise Level	Time Period
Exterior noise standards, L_{50}	
50 dBA	10:00 p.m.–7:00 a.m.
55 dBA	7:00 a.m.–10:00 p.m.
Interior noise standards, L_8	
45 dBA	10:00 p.m.–7:00 a.m.
55 dBA	7:00 a.m.–10:00 p.m.

Source: Codified Ordinances of the County of Orange, Sections 4-6-5 and 4-6-6

City of Dana Point Noise Standards

Noise Element of the General Plan and Municipal Code. The Noise Element of the General Plan (July 1991) contains noise standards. The City specifies outdoor and indoor noise limits for residential uses, hotels/motels, commercial, and other land uses. The noise standard for exterior living areas is 65 dBA CNEL. The indoor noise standard is 45 dBA CNEL, which is consistent with the standard in the California Noise Insulation Standard.

In addition, the City has adopted a quantitative Noise Control Ordinance (Municipal Code, Chapter 11.10). The Ordinance establishes maximum permissible hourly noise levels (L_{50}) for sensitive land uses in the City. Tables E and F list exterior and interior noise limits for residential uses.

Table E: Exterior Noise Limits for Residential Land Uses, L_N (dBA)

Time Period	L_{50}	L_{25}	L_8	L_2	L_{max}
Night: 10:00 p.m.–7:00 a.m.	50	55	60	65	70
Day: 7:00 a.m.–10:00 p.m.	55	60	65	70	75

Source: City of Dana Point Municipal Code.

Table F: Maximum Interior Sound Levels for Residential Land Uses, L_N (dBA)

Time Interval	L_8	L_2	L_{max}
Night: 10:00 p.m.–7:00 a.m.	45	50	55
Day: 7:00 a.m.–10:00 p.m.	55	60	65

Source: City of Dana Point Municipal Code.

The City's Noise Control Ordinance also governs the time of day that construction work can be conducted. Noise sources associated with construction, repair, remodeling, or grading of any real property are exempt from the noise standards listed in Tables E and F, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, Saturdays, or at any time on Sundays or federal holidays.

IMPACTS AND MITIGATION MEASURES

Short-Term Construction-Related Noise Impacts

Two types of short-term noise impacts would occur during Project construction. The first is the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the Project site. The pieces of heavy equipment to be utilized during construction will be moved to the site and remain for the duration of each construction phase. The increase in traffic flow on the surrounding roads due to construction traffic is expected to be small. The associated increase in long-term traffic noise will not be perceptible. However, there will be short-term intermittent high noise levels associated with trucks passing by from the Project site.

The second type of short-term noise impact is related to the noise generated by heavy equipment operating within the Project area. Construction of the proposed Marina Improvement Project will occur in multiple phases, which will consist of multiple tasks. The activities that will occur during these tasks will include:

- Slip demolition and pile removal
- Pile installation
- Slip installation

The following construction equipment will be required to complete the above tasks:

- Backhoes
- Loaders
- Bobcats
- Tugboats
- Heavy duty trucks
- Gas skiffs
- Cranes
- Generators
- Air Compressors
- Drill rigs
- Barges
- Jackhammers
- Pile drivers

Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table G lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor.

Pile driving will be the noisiest activity on-site generating up to 93 dBA L_{max} at a distance of 50 ft. Other construction equipment used on-site, such as loaders and backhoes, would generate up to 86 dBA L_{max} at a distance of 50 ft.

The nearest sensitive receptors are the Dana Point Marina Inn, located approximately 200 ft from the Marina Improvement Project construction area, and the live-aboards who are in various locations throughout the Marinas. These sensitive receptors would be subjected to short-term noise reaching 87 dBA L_{max} generated by construction activities. Construction related noise impacts from the proposed Project would be potentially adverse. Construction related short-term noise levels would be higher than existing ambient noise levels in the Project area today but would no longer occur once construction of the Project is completed. Implementation of the mitigation measures listed below and the applicable noise standards would reduce construction noise impacts. However, the length of construction for the proposed Project is anticipated to be up to eight years; therefore, construction-related noise impacts are deemed to be significant and unavoidable due to the duration of construction activities.

Table G: Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 feet)	Suggested Maximum Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81–96	93
Rock Drills	83–99	96
Jackhammers	75–85	82
Pneumatic Tools	78–88	85
Pumps	74–84	80
Scrapers	83–91	87
Haul Trucks	83–94	88
Cranes	79–86	82
Portable Generators	71–87	80
Rollers	75–82	80
Dozers	77–90	85
Tractors	77–82	80
Front-End Loaders	77–90	86
Hydraulic Backhoe	81–90	86
Hydraulic Excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Source: Noise Control for Buildings and Manufacturing Plants, Bolt, Beranek & Newman 1987.

Short-Term Construction-Related Vibration Impacts

The proposed pile driving for pile installation in the Marinas would generate the primary source of vibration during construction. The closest pile driving activities to a sensitive receptor would occur at a distance of 200 ft from the Dana Point Marina Inn, which is the closest land based sensitive receptor. Using Equation 9 and Table 17 from the Caltrans *Transportation and Construction-Induced Vibration Guidance Manual* (Jones & Stokes, June 2004) it was estimated that the vibration level at the Dana Point Marina Inn would be 0.08 inch per second (in/sec). Although perceptible, this level would not exceed the 0.1 in/sec threshold below which there is virtually no risk of resulting in architectural damage to normal buildings. Therefore, the proposed Project would not result in any significant vibration impacts to the Dana Point Marina Inn.

The live-aboards are also in proximity to the proposed construction activities; however, the boats would not be subject to ground-borne vibrations. In addition, implementation of the mitigation measures would minimize construction-related nuisance impacts, and no significant adverse vibration impacts would occur from the proposed Marina Improvement Project.

Long-Term Noise Impacts

The Marina Improvement Project is not expected to increase the number of vehicle trips on local roadways or boats using the docks. Therefore, the proposed Project would not result in any long-term noise impacts.

Mitigation Measures

Implementation of the following mitigation measures would reduce the potential adverse Project construction noise impacts to less than significant levels.

NOI-1 Prior to issuance of any construction or building permits, the Orange County Dana Point Harbor (OC DPH) shall verify that construction hour limitations are noted on building and/or grading plans. Construction shall be limited to the hours of 7:00 a.m. to 8:00 p.m., Monday through Saturday. In accordance with the County of Orange and the City of Dana Point Noise Ordinances, no construction activities will be conducted outside of these hours or on Sundays and federal holidays.

The following measures shall also be noted on building and/or grading plans and implemented to reduce potential construction noise impacts on nearby sensitive receptors:

1. The Project contractor shall place all stationary construction equipment so that emitted noise is directed away from the sensitive receptors nearest the construction areas.
2. The construction contractor shall locate equipment staging in areas farthest from noise-sensitive receptors nearest the Project site during all Project construction.

NOI-2 Throughout the phased construction activities of the proposed Project, the OC DPH shall coordinate with the existing residents living on boats within the Marina to relocate them to be moved as far as feasible from the construction activities to minimize construction-related noise nuisance impacts. In addition, OC DPH staff shall provide Marina boat residents with information regarding the availability of other nearby Marina facilities. Information regarding the timing and location of the construction activities shall also be made available on the Harbor Web site, by postings throughout the Marina, and other means as appropriate.

Cumulative Impacts

Noise from construction of the proposed Project and other nearby projects would be localized. Therefore, the cumulative study area for construction noise is the area immediately surrounding or between each particular Project site. The only project in close proximity to the Marina Improvement Project that could potentially have cumulative noise impacts is the Dana Point Harbor Revitalization Commercial Core Project.

The Commercial Core Project associated with the Dana Point Harbor Revitalization Project could potentially be under construction at the same time as the Marina Improvement Project. That Project has the potential to generate construction-related noise in the immediate area, which was considered cumulatively significant in the Program FEIR. Because construction noise for the Marina Improvement Project is also considered a significant adverse impact, the cumulative construction noise impacts for the proposed Project, in conjunction with the Commercial Core Project, is considered cumulatively adverse and significant.

Ground-borne vibration impacts from equipment that would be used during Project construction are localized. The proposed Project would not result in any significant vibration impacts; however, the Program FEIR concluded that vibration impacts on nearby noise-sensitive receptors would be significant and unavoidable due to the duration of construction activities. Therefore, if construction of the proposed Project were to occur at the same time as construction of the Commercial Core Project, ground-borne vibration impacts would be cumulatively adverse and significant.

Long-term noise generated by on-site operations for the Marina Improvement Project would not change after implementation of the proposed Project; the Project is reducing the number of slips in the Harbor. Therefore, the proposed Project would not contribute to off-site cumulative noise impacts from other planned and future projects. Therefore, impacts related to operational noise would be less than cumulatively significant.

Significant Unavoidable Adverse Impacts

Although implementation of the mitigation measures above would help reduce Project-related construction noise impacts, the length of construction for the proposed Project is anticipated to be up to eight years; therefore, construction-related noise impacts are deemed to be significant, unavoidable, and adverse due to the duration of construction activities. In addition, if the Commercial Core Project is under construction at the same time as the Marina Improvement Project, cumulative construction-related noise and vibration impacts would be considered significant and adverse. All other potential Project impacts related to long-term operational noise are considered less than significant.

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