

January 4, 2018

Ms. Jolie Harrison, Division Chief  
Permits and Conservation Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway, F/PR1 Room 13805  
Silver Spring, Maryland 20910

Subject: Incidental Harassment Authorization Application for the Coast Boulevard Walkway Improvements Project in La Jolla California

Dear Ms. Harrison:

Please find the enclosed request for an incidental take authorization under section 101(a)(5)D of the Marine Mammal Protection Act of 1972, as amended, for the take of marine mammals incidental to conducting the Coast Boulevard Walkway Improvements Project by the City of San Diego.

An Incidental Harassment Authorization (IHA) was given for this project earlier this year (May 31, 2017); however, the work was unable to proceed as planned. An IHA application is being submitted for the IHA to cover the same project in 2018.

Like in 2017, the City plans to conduct improvements to an existing public parking lot, sidewalk, and landscaping areas located on the bluff tops above Children's Pool (a public beach and marine mammal haulout area) to upgrade public access and safety. The proposed project is scheduled from June 1, 2018 through December 14, 2018 in compliance with the City's Seal Pupping Season Moratorium (December 15 through May 15). Because the City's activities have the potential to cause Level B harassment of three species of marine mammals (harbor seal, California sea lion, northern elephant seal), we are requesting an IHA.

The City has pursued an open, as well as, a public process to develop the proposed action that includes mitigation measures to minimize potential effects on pinnipeds present at nearby sites (e.g. no construction activities during harbor seal pupping and weaning season,

Page 2  
Ms. Jolie Harrison  
January 4, 2018

and acoustic and marine mammal monitoring during project implementation). Our staff and our consultant, Tierra Data Inc., have updated the IHA application for this project.

We look forward to working with you and your staff to answer any questions you may have about this application. If you have any questions you may contact me by email at spaver@sandiego.gov or by phone at (619) 533-3629 or please feel free to contact Derek Langsford, Tierra Data Inc., at derek.langsford@tierradata.com or (760) 751-6169 with any questions regarding this application.

Sincerely,



Sean Paver  
Senior Environmental Planner

Enclosure: IHA Application for the Coast Boulevard Walkway Project

cc: Jordan Carduner, Office of Protected Resources, National Marine Fisheries Service  
Nikki Lewis, Senior Engineer, Public Works Department  
Michael Ramirez, Associate Engineer, Public Works Department  
Natalie DeFreitas, Senior Planner, Public Works Department  
Peter Fogec, Associate Planner, Public Works Department  
Derek Langsford, Biology Practice Manager, Tierra Data Inc



December 21, 2017

Jolie Harrison, Division Chief  
Permits and Conservation Division, Office of Protected Resources,  
1315 East-West Highway, F/PR1 Room 13805,  
Silver Spring, MD 20910

**Subject: Incidental Harassment Authorization for the Coast Boulevard Improvements Project, La Jolla, California**

Dear Ms. Harrison:

On behalf of City of San Diego (City), Tierra Data, Inc. is pleased to have prepared the attached application request for the issuance of an Incidental Harassment Authorization (IHA) pursuant to Section 101(a)(5)D of the Marine Mammal Protection Act (MMPA) for incidental take of three species by Level B harassment during its planned construction activities associated with improvements to Coast Boulevard, La Jolla, California. An IHA was issued for this project earlier this year (sent by Jordan Carduner, NOAA, May 31, 2017); however, the work was unable to proceed as planned. An IHA application is being made for the IHA to cover the same project in 2018.

Like last year, the City plans to conduct improvements to an existing public parking lot, sidewalk, and landscaping areas located on the bluff tops above Children's Pool, a public beach, to upgrade public access and safety from June 1, 2018 through December 14, 2018 in compliance with the City's Seal Popping Season Moratorium (December 15 through May 15). Because the City's activities have the potential to cause Level B Harassment of marine mammals, we are requesting an IHA for harbor seals that routinely haul out on the beach below the project, as well California sea lions and northern elephant seals that occasionally haul out on the beach.

The updated application comes with appendices that include:

- The California Environmental Quality Act Mitigated Negative Declaration for the project (dated 1/29/2015);
- The subsequently prepared Biology Report for the proposed project (dated September 1, 2016); and,
- An updated Acoustic and Marine Mammal Monitoring Plan.

In addition, a folder containing a Shapefile (.shp) is provided for your use.

Work on the adjacent Children's Pool Lifeguard Station project for which IHAs were issued means the marine mammals at the Children's Pool beach are well studied and their behavior in response to construction is well documented. In addition, some structural testing of the wall above the beach performed under last year's IHA occurred in summer 2017 and the monitoring results are incorporated in this IHA application.

We look forward to working with you and your staff again to answer any questions you may have about this application. Please feel free to contact me at (760) 749 2247 or at [derek.langsford@tierradata.com](mailto:derek.langsford@tierradata.com) with additional questions.

Sincerely,

Derek H. Langsford, PhD, Biology Practice Manager

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**INCIDENTAL HARASSMENT AUTHORIZATION APPLICATION**  
**FOR THE CITY OF SAN DIEGO'S**  
**COAST BOULEVARD WALKWAY IMPROVEMENTS**

**June 1, 2018 through December 14, 2018**

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Submitted to:

**Office of Protected Resources,  
National Marine Fisheries Service,  
National Oceanographic and Atmospheric Administration**  
1315 East-West Highway  
Silver Spring, MD 20910

Submitted by:

**City of San Diego**  
525 B Street, MS 908A  
San Diego, CA 92101



*Prepared for:*

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Contact: Derek Langsford, Ph.D.*



**December, 2017**

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## **TABLE OF CONTENTS**

<b>Acronyms</b> .....	ii
Summary of Request.....	1
IHA Questions .....	3
1. Description of Specified Activity .....	3
2. Dates, Duration, and Specified Geographic Region .....	4
3. Species and Numbers of Marine Mammals .....	7
4. Affected Species Status and Distribution.....	8
5. Type of Incidental Taking Authorization Requested .....	9
6. Take Estimates for Marine Mammals .....	9
7. Anticipated Impact of the Activity.....	15
8. Anticipated Impacts on Subsistence Uses.....	15
9. Anticipated Impacts on Habitat.....	15
10. Anticipated Effects of Habitat Impacts on Marine Mammals .....	15
11. Mitigation Measures .....	16
12. Arctic Plan of Cooperation .....	16
13. Monitoring and Reporting.....	16
14. Suggested Means of Coordination .....	17
Literature Cited .....	18
Appendix A. Mitigated Negative Declaration, 2015 .....	A-1
Appendix B. Biological Letter Report (September 2016) .....	B-1
Appendix C. Marine Mammal and Acoustic Monitoring Plan .....	C-1

## **LIST OF FIGURES**

Figure 1. Project Location and Known Haul Out Sites in the Project Area.....	5
Figure 2. Hourly Harbor Seals Counts at Children's Pool Beach, South Casa Beach, Seal Rock, and the Reef Area Outside the Childrens Pool Break Wall (Hanan and Associates 2017). .....	10
Figure 3. Summary of Average Harbor Seal Counts at Children's Pool on a per Hour Basis (2014 to 2016). .....	10
Figure 4. Number of Harbor Seals Hauled Out by Time During the Children's Pool Lifeguard Station Construction Monitoring (Source: Hanan & Associates 2014). .....	11
Figure 5. Potential Level B Harassment (90 dB rms) ZOI and Example Monitoring Locations. ....	14

## **LIST OF TABLES**

Table 1. Summary of Acoustic Data Collected During the City Lifeguard Station Demolition and Construction Monitoring (Source: Hanan & Associates 2014). .....	3
Table 2. Summary of Acoustic Data Collected During the Coast Boulevard Improvements Project, 2017 (City of San Diego 2017) .....	4
Table 3. Project Schedule of Activity, Equipment, and Associated Sound Levels .....	6

## **ACRONYMS**

$\mu\text{Pa}$	micropascal
dB	decibel(s)
ft, ft <sup>2</sup>	feet, square feet
IHA	Incidental Harassment Authorization
m, m <sup>2</sup>	meters, square meters
MMO	Marine Mammal Observer
NIST	National Institute of Standards and Technology
NMFS	National Marine Fisheries Service
re 20 $\mu\text{Pa}$	referenced to 20 micropascals (for in-air sound)
rms	root mean square
SLM	Sound Level Meter
SPL	sound pressure level
ZOI	zone of influence



## **Summary of Request**

In accordance with the Marine Mammal Protection Act of 1972 (MMPA), as amended, the City of San Diego is applying for an Incidental Harassment Authorization (IHA) associated with the Coast Boulevard Walkway Improvements Project, located in La Jolla, California. The City has determined that noise from demolition and construction has the potential to rise to the level of harassment, as defined under the MMPA. Three species of pinnipeds are known to haul out at Children's Pool, a nearby public beach, and may be temporarily exposed to sound pressure levels (SPLs) that have been identified in the National Marine Fisheries Service (NMFS) interim guidance as in-air acoustic thresholds for behavioral disturbance. These species include the Pacific harbor seal (*Phoca vitulina richardii*), California sea lion (*Zalophus californianus*), and northern elephant seal (*Mirounga angustirostris*).

The proposed Project consists of improvements to an existing public parking lot, sidewalk, and landscaping areas above the Children's Pool beach approximately 5 to 12 meters (m; 16 to 40 feet [ft]) above mean sea level. The western portion of the site overlooks the Children's Pool beach. Construction and/or demolition is planned to start on June 1, 2018 and be completed by December 14, 2018. A California Environmental Quality Act (CEQA) Mitigated Negative Declaration was adopted for this project in 2015 (Appendix A). As part of the documentation prepared for the CEQA analysis, a Biological Letter Report (Tierra Data 2016) was prepared identifying the potential for impacts to marine mammals and the need for an IHA. Furthermore, the first phase of this project (testing of a retaining wall for structural integrity) was completed in July 2017, and data for the subsequent monitoring report has been provided in this IHA application.

The Children's Pool was created in 1932 by building a breakwater wall that allowed for a protected pool for swimming. Since then, the pool has partially filled with sand and the beach has widened to approximately 50 m (164 ft) at low tide. Children's Pool has become a haul out and pupping site for harbor seals, which are by far the dominant observed marine mammal in the project area. California sea lions and northern elephant seals also haul out in the project area, but in far lower numbers.

Several studies have documented harbor seal patterns of daily, seasonal, and transient use of the Children's Pool area (Yochem and Stewart 1998; Hanan & Associates 2004, 2011, 2014, 2017; Linder 2011; Seal Conservancy 2016). Abundances at any given time may range from less than 15 to a maximum that rarely exceeds 200 at the Children's Pool haul out, or 250 including nearby haul out areas in the nearby vicinity (Linder 2011; Hanan & Associates 2014). The area of available habitat apparently limits the maximum number of pinnipeds that haul out at Children's Pool. However, it is estimated that as many as 600 harbor seals may haul out over the course of a year based on movements of individuals between the coast and offshore islands (Linder 2011) with an average of 55 harbor seals counted per day at the Children's Pool beach over a three-year period (Hanan, D.A. pers. comm. 2017).

The Children's Pool is designated as a shared-use beach, with the beach and surrounding waters used for swimming, surfing, kayaking, diving, tide pooling, and nature watching. The harbor seals, in particular, draw many visitors. During the harbor seal pupping season (December 15 through May 15), the beach is closed to the public. Outside of the pupping season, beach access and recreational uses are permitted, provided that there is no direct harassment of the harbor seals. A guideline rope strung along the upper part of the beach, as well as signage, encourage the public to respect the seals in the area and view them at a safe distance. Studies indicate that the harbor seals are habituated to human presence at Children's Pool; however, habituation or reaction to human activity depends on the individual seal and the circumstances.

Implementation of the proposed Project has the potential for temporary, Level B harassment of pinnipeds at the Children's Pool haul out. The proposed action will minimize the potential disturbance by avoiding the harbor seal pupping season (December 15 to May 15). The project will include specific acoustic monitoring as well as marine mammal monitoring to document the actual construction noise effects on pinnipeds, assess whether additional mitigation measures may be required to further minimize effects, and to provide information to validate "take" estimates.

The proposed project is adjacent to the Children's Pool Lifeguard Station, which was recently constructed after demolition of the previous station location at the back of the beach. IHAs were issued for that project between 2013 and 2015. Similar construction equipment as used for the Lifeguard Station project will be used for proposed project, but construction-related disturbance effects are anticipated to be less due to the location of the proposed project above the Children's Pool beach and extension of activities further inland. Monitoring during the demolition and construction of the Lifeguard Station project documented that the majority of construction-related noises did not rise to Level B harassment acoustic thresholds in areas where harbor seals were hauled out. In addition, the percentage of harbor seal reactions to construction-related activities was relatively low (mainly alerts) and less than caused by other sources of disturbance (mainly public use).

It is estimated that the number of incidental "takes", by Level B harassment only, may be 1,620 for harbor seals (5.2% of the California stock), 36 for California sea lions (<1% of the California stock), and 14 for northern elephant seals (<1% of the California stock). These estimated "takes" represent a small number of individuals relative to the California population stocks for these species (Carretta et al, 2016).

Conservative assumptions were used to estimate the zone of influence (ZOI) for SPLs associated with the harbor seal and other pinniped in-air sound disturbance thresholds (90 dB rms and 100 dB root mean square [rms], respectively), which were computed using the loudest expected construction noise source levels (110 dB rms). The number of days where the regulatory thresholds might be exceeded were based on review of the duration of proposed construction and demolition and equipment used during those activities. Monitoring data from the Children's Pool Lifeguard Station Project and recent docent-collected data were consulted to provide reasonable estimates of the species and number of individuals that may be anticipated to be present during project activities.

Pursuant to the MMPA Section 101(a)(5)(D), the City submits this application and request to the NMFS for an IHA for the incidental, but not intentional, taking of three marine mammal species during construction of the Coast Boulevard Walkway Improvements Project, for the period from June 1, 2018 to December 14, 2018. The estimated "takes" of the 1,620 Pacific harbor seals, 36 California sea lions, and 14 northern elephant seals this document would be in the form of non-lethal, temporary Level B harassment only, and is expected to have a negligible impact on these species. In addition, the taking would not have an unmitigable adverse impact on the availability of these species for subsistence use.

Regulations governing the issuance of incidental take under certain circumstances are codified in 50 Code of Federal Regulations (CFR) Part 216, Subpart I (Sections 216.101 – 216.108). Section 216.104(a) sets out 14 specific items that must be addressed in requests for take; these 14 items are addressed in Sections 1 through 14 of this IHA application.

## IHA Questions

### 1. Description of Specified Activity

*("A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals")*

The project consists of demolition and construction of improvements to an existing public parking lot, sidewalk, and landscaping areas located approximately 5 to 12 m (16 to 40 ft) above a public beach (Children's Pool) in La Jolla, CA. The total area of disturbance is approximately 1,214 square meters (m<sup>2</sup>; 13,000 square feet [ft<sup>2</sup>]).

The components of the project that may result in Level B harassment "take" include the demolition and construction of the asphalt parking lot; concrete curb, gutter, and sidewalk; placement of landscape boulders; and delivery and haul away of materials. These components will require the use of a variety of heavy equipment, machinery, and trucks, such as concrete breaker, jackhammer, backhoe, bobcat, dump trucks, cement/pump truck, paver, and roller. Similar equipment was used during the recent demolition and construction of the Children's Pool Lifeguard Station Project. The highest sound levels expected for the project were estimated as 100 to 110 dB rms. Results of acoustic monitoring during that project showed peak values of 91 to 103 dB rms within 15 to 20 m (49 to 66 ft) of construction activities (Table 1).

**Table 1. Summary of Acoustic Data Collected During the City Lifeguard Station Demolition and Construction Monitoring (Source: Hanan & Associates 2014).**

Equipment	Recording Location			
	Top of Stairs + Casa Beach		Middle of Rope at Children's Pool	
	High	Mean	High	Mean
Backhoe	77.7	73.8	68.7	68.1
Bobcat	91.1	72.9	77.1	65.9
Cement Pump	72.6	70.4	54.7	N/A
Compactor	67.5	66.7	73.9	N/A
Concrete Saw	92.5	75.9	74.3	70.0
Crane	88.2	75.2	66.2	63.5
Driver/Drill	77.5	73.6	69.6	N/A
Excavator	90.9	75	83.8	65.8
Forklift	83.9	76.7	75.7	N/A
Gas Powered Saw	77.7	69.3	58.7	N/A
Generator Powered Jackhammer	86.5	77.8	70.7	69.1
Grinder	71.8	67.8	63.6	61.7
Gun Powder nail gun	69.4	66.2	64.7	61.1
Hack Saw	76.9	72.3	71.0	67.4
Hammer	81.6	70.0	66.5	58.8
Hand Tools	85.1	67.5	64.4	59.9
Impact Driver	80.0	72.5	69.6	65.8
Jackhammer on Bobcat	96.6	76.3	87.0	70.8
Jackhammer on Excavator	103.1	87.3	92.0	N/A
Mini Excavator	89.3	67.9	79.0	63.3
Rebar Saw	71.0	69.0	64.2	N/A
Shovel	65.4	62.8	61.7	60.5
Survey Equipment	63.2	63.1	58.5	N/A

Notes: The Top of Stairs+Casa Beach location was closest to the construction source, and the Middle Rope at Children's Pool was located at the Level B sound buffer demarcation. N/A=One Sample

Over four days in July 2017, an initial phase of the project identified in this IHA Application occurred at the area adjacent to the Children's Pool beach, with testing the structural integrity of a retaining wall associated with the stairs leading down to the beach from Coast Boulevard above the beach, as well as a wall above the beach. This involved using two types of drills to extract core samples for testing the structural integrity of the wall, along with repair of the holes. During this phase, both acoustic and marine mammal monitoring occurred to assess any project-related impacts on all four days. Four locations were used to collect acoustic data on, or above, the beach to assess the potential for Level B exposure to marine mammals hauled out on the beach. The monitoring report for this phase showed that mean source levels (measured at approximately 15 m [50 ft]) for the two types of drills used did not exceed the 90 dB rms Level B thresholds for airborne exposure to noise (Table 2), and were only slightly above, or below, ambient levels of noise at the data collection locations. These drills, or similar drill, may be used during the upcoming phases of the project.

**Table 2. Summary of Acoustic Data Collected During the Coast Boulevard Improvements Project, 2017 (City of San Diego 2017)**

Activity	Data Collection Location (dB re 20 µPa)				
	Source <sup>2</sup>	East side of Children's Pool beach	Middle of Children's Pool beach <sup>3</sup>	West side of Children's Pool beach	Above the Children's Pool beach
Ambient <sup>1</sup>	-	80.0	84.6	82.8	87.6
Large Drill	81.8	85.3	87.7	79.9	-
Small Drill	86.6	76.4	91.1	-	-

Notes: <sup>1</sup>Measured in the absence of project-related activities.

<sup>2</sup>Measured at approximately 15 m (50 ft).

<sup>3</sup>Comparable to the "Middle of Rope at Children's Pool" location identified in Table 1.

It is less likely that Level B harassment "take" may occur during marking of parking lot stalls, rock wall construction, fence installation, or removal and installation of irrigation and landscaping because heavy equipment or loud machinery would not be required during those project components.

## **2. Dates, Duration, and Specified Geographic Region**

*("The date(s) and duration of such activity and the specified geographical region where it will occur.")*

The location of the project is Coast Boulevard, La Jolla, California (Figure 1). All construction will be performed adjacent to the Lifeguard Station at 827 ½ Coast Boulevard, La Jolla CA 92037: Children's Pool (32° 50' 50.02" N 117°16' 42.8" W). The project is planned to start on June 1, 2018 and be completed by December 14, 2018, with a work week of Monday through Saturday (Table 3). Between these dates, there are 164 available days for project activities, with 108 days of work that may exceed airborne regulatory thresholds (100 dB and 90 dB rms) based on maximum source levels of 110 dB (Table 3). No work is planned on all applicable California and Federal holidays. In addition, no construction will occur during the Seal Popping Season Moratorium (December 15 to May 15).



**Figure 1. Project Location and Known Haul Out Sites in the Project Area.**

**Table 3. Project Schedule of Activity, Equipment, and Associated Sound Levels**

<b>Task</b>	<b>Activity</b>	<b>Equipment</b>	<b>Maximum dB level<sup>1</sup></b>	<b>Duration (weeks)</b>	<b>Work days<sup>2</sup></b>	<b>Dates (2018)</b>
Mobilization & temporary facilities	Install: temporary perimeter fencing, temporary utilities, temporary office trailer (if needed), temporary sanitary facilities, concrete wall testing	truck, backhoe, trailer, small auger, hand/power tools including core drill, chipping hammer, and grinder	104 <sup>3</sup>	4	24	6/1-6/30
Demolition & site clearing	Remove hardscape (planters, curb and sidewalk) and landscaping, debris to be hauled by via Coast Boulevard	excavator, hydraulic ram, jackhammer, trucks, hand/power tools	110	2	<b>12</b>	7/3-7/14
Site preparation & utilities	Rough grade site, modify underground utilities if necessary	loader, backhoe, truck	110	4	<b>24</b>	7/17-8/11
Site improvements	Construct concrete walls, curbs, and planters, fine grade, irrigation, hardscape, landscape, hand rails	backhoe, truck, hand/power tools, concrete pump/truck, fork lift	110	12	<b>72</b>	8/14-11/3
Final inspection, demobilization	Remove construction equipment, inspection, make corrections	truck, hand/power tools	100	4	24	11/6-12/1

Note: <sup>1</sup>Maximum dB level measured at 15 m (50 ft).

<sup>2</sup>Bold text indicates the days when source levels were used to determine 108 days of work that may exceed regulatory thresholds.

<sup>3</sup>Sound levels during this period may exceed 100 dB rms for a few minutes during one day of demolition/construction.

### **3. Species and Numbers of Marine Mammals**

*("The species and numbers of marine mammals likely to be found within the activity area.")*

The beaches and rocks at, or near, the Children's Pool are known haul out sites for harbor seals (see Figure 1). Starting in the mid-1990's, there was an increase in numbers of harbor seals using the beaches and rocks in the area around the Children's Pool (Yochem and Stewart 1998). As a result, the City commissioned several studies for harbor seal abundance trends at this site (Yochem and Stewart 1998; Hanan & Associates 2004, 2011).

Abundances at any given time may range from a low of 0 to 15 seals to a maximum that rarely exceeds 200 seals at the Children's Pool, and 250 individuals in the vicinity (Linder 2011, Hanan & Associates 2014). When abundances are low, seals tend to cluster on the western side of Children's Pool, and when abundances are high, the seals spread out along the beach. A limiting factor to the maximum number of individuals observed at Children's Pool at any given time likely relates to the area available for haul outs (Linder 2011). Several factors influence the variability in harbor seal abundance, including daily foraging and resting patterns, season, weather conditions, and movements by transient individuals. Generally, the highest abundances occur during the months of April and May, at the end of the pupping season and beginning of the molting season (Linder 2011).

Radio tagging and photographic studies have identified that only a portion of seals utilizing a haul out site are present at any specific moment or day (Hanan 1996, 2005; Gilbert et.al. 2005; Harvey and Goley 2011; Linder 2011; Hanan & Associates 2014). These studies further indicate that seals are constantly moving along the coast, including to/from offshore islands (California Channel Islands, Las Islas Coronados). Linder (2011) estimated that there may be as many as 600 harbor seals using Children's Pool beach during a year associated with the coastal movements of transient individuals, and suggested that the haul out at Children's Pool beach is possibly part of a regional network of interconnected resting and pupping sites. During the three years of monitoring for the Lifeguard Tower Construction project, an hourly mean count of 54.5 harbor seals, including pups, was calculated from 3,376 counts (Hanan, D.A. pers. comm. 2017).

California sea lions and northern elephant seals have been observed in the water, or on the beach or rocks at/near Children's Pool, but these areas are not regularly used as haul-out locations for either species (Yochem and Stewart 1998; Hanan & Associates 2004, 2011; Linder 2011). More recently, during monitoring efforts in 2013 and 2014 associated with the Children's Pool Lifeguard Station construction (Hanan & Associates 2014), three California sea lions and two northern elephant seals were observed using the Children's Pool beach. Evaluation of Children's Pool docent data from 2014 to 2016 (Seal Conservancy 2016), indicates that elephant seals used the beach as a haul out location on 38 days in 2014, 36 days in 2015, and on one day in 2016 (as of early November). During the same time-period, California sea lions were observed on the Children's Pool beach on 67 days in 2014, 14 days in 2015, and 95 days in 2016. During the monitoring for the Lifeguard Tower Construction project in 2015 and 2016 (201 days of project-related activities), there was a mean of one California sea lion observed for every three days of construction and one northern elephant seal for every 8 days of construction.

Northern fur seals (*Callorhinus ursinus*) and Guadalupe fur seals (*Arctocephalus townsendi*) have been observed at nearby beaches, but their occurrences at the Children's Pool would be considered extralimital and would not be expected. As a result, no "take" for these species is requested as part of this application. However, if either of these species, or any other marine mammal species not covered by this IHA, were to be observed at the Children's Pool beach, all project activities would stop and appropriate steps outlined in the response to IHA Question 6 would be taken to ensure that no "take" were to occur as part of the project activities.

#### **4. Affected Species Status and Distribution**

*("A description of the status and distribution, including seasonal distribution (when applicable), of the affected species or stocks of marine mammals likely to be affected by such activities.")*

##### Pacific Harbor Seals

Harbor seals are not listed as "endangered" or "threatened" under the Endangered Species Act, nor designated as "depleted" under the MMPA (Carretta, et al. 2016). On the Pacific coast of North America, they are found from Baja California, Mexico to western Alaska and are one of the most frequently observed marine mammals along this coastal environment. The harbor seals that occur in the project area are likely part of the California Stock, which ranges from the California/Oregon border to Baja Mexico. (Carretta, et al. 2016).

Harbor seal abundance at the haul out sites is seasonal, with peaks during their pupping and molting periods, which generally range from January to May (Hanan & Associates 2004, 2011). Pupping and molting progresses north over time, and occurs between April and June in Oregon and Washington (Jeffries 1984, 1985; Huber et al. 2001). Prey availability has also been associated with increases, or decreases, in density and may lead to seasonal shifts along the Pacific coast (Grigg et al. 2009). In relationship to the entire California Stock, harbor seals do not have a significant mainland California distribution south of Point Mugu due to beach urbanization and potential disturbance impacts. Children's Pool is one of four known haul outs in San Diego County (also observed at north end of Torrey Pines beach, in a cave on the exposed ocean side of Point Loma, and on the San Diego Bay side of Point Loma). Carretta et al. (2016) reported that, as of a 2012 estimate based on pup counts, the California Stock is estimated to be at 30,968 harbor seals.

The Pacific harbor seal is related to two additional subspecies, which occur in the waters around Japan (*P. v. stejnegeri*) and the Atlantic (*P. v. concolor*) (Carretta et al. 2016); neither of these subspecies would be expected to occur in the project area.

##### California sea lions

California sea lions are not listed as "endangered" or "threatened" under the Endangered Species Act, nor designated as "depleted" under the MMPA (Carretta, et al. 2016). They are found from southern Mexico to southwestern Canada and appear to be at their carrying capacity for the environment. More than 95% of the U.S. Stock breeds and gives birth to pups on San Miguel, San Nicolas, and Santa Barbara islands. Some movement has been documented between the U.S. Stock and Western Baja California, Mexico Stock, but rookeries in the U.S. are widely separated from the major rookeries of western Baja California. Smaller numbers of pups are born on San Clemente Island, the Farallon Islands, and Año Nuevo Island (Lowry et al. 1991). While a comprehensive population abundance estimate is not possible because all sex and/or age classes are not hauled out at the same time, Carretta et al. (2016) reported that the California sea lion population is estimated to be at 296,750 animals based on pup counts. There are no sea lion rookeries at, or near, the Children's Pool. Individuals of both sexes, as well as all age classes (pup to adult) are known to infrequently visit the Children's Pool, and may haul out, on occasion (Hanan & Associates 2004, 2011; Seal Conservancy 2016).

##### Northern elephant seals

Northern elephant seals are not listed as "endangered" or "threatened" under the Endangered Species Act, nor designated as "depleted" under the MMPA (Carretta et al. 2016). They are found from Baja California, Mexico to the Gulf of Alaska and are considered to be at their Optimum Sustainable Population level. However, as summarized by Carretta et al. (2016), a complete population assessment



of elephant seals is not possible because all age classes are not ashore simultaneously. Utilizing elephant seal data from U.S. rookeries in 2010, Lowry et al. (2014) reported that there was a total of 40,684 pups born, which was then used to generate a population estimate of 179,000 elephant seals. The population is estimated to have grown at 3.8% annually since 1988 (Lowry et al. 2014). There are no elephant seal rookeries at or near Children's Pool; however, all age classes (pups to adults) are infrequently observed at the Children's Pool and may haul out on occasion (Hanan & Associates 2004, 2011, 2014; Seal Conservancy 2016).

## **5. Type of Incidental Taking Authorization Requested**

*("The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury, and/or death) and the method of incidental taking.")*

Noise associated with demolition and construction of the proposed project has the potential to rise to the level of harassment, as defined under the MMPA. All "takes" of harbor seals, California sea lions, and northern elephant seals during this project would be Level B harassment only, and an IHA for Level B "take" is being requested.

Construction activities will be restricted to the project area, which is 5 to 12 m (16 to 40 ft) above the Children's Pool beach. The elevated location of the project area reduces the potential for harbor seals, California sea lions, and northern elephant seals to be flushed into the water as a direct result of construction activities. There will be no intrusive, injurious, or lethal takes.

## **6. Take Estimates for Marine Mammals**

*("By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in Section 5, and the number of times such takings by each type of taking are likely to occur.")*

The total estimated number of "takes" associated with the project from noise during demolition and construction of the Coast Boulevard Walkway Improvements project is summarized in Table 3. The information considered and methods used to estimate take are described below.

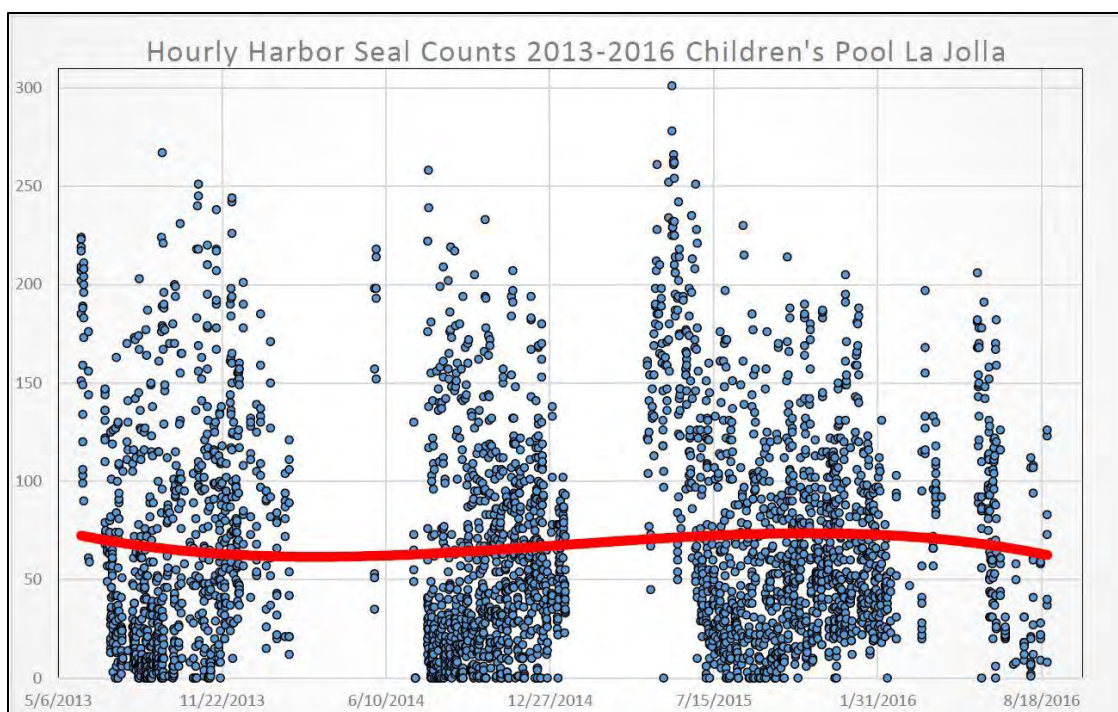
**Table 3. Number of "Takes" (Level B Harassment) Requested per Species.**

<b>Species</b>	<b>Number of Level B "takes" Requested</b>
Harbor seal	1,620
California sea lion	36
Northern elephant seal	14
<b>Total</b>	<b>1,670</b>

### Pacific Harbor Seal

#### *Seasonal Use Patterns*

Harbor seal abundance is seasonal at Children's Pool, with generally higher counts during pupping and molting periods (Hanan and Associates 2013) and as can be seen from hourly counts over three seasons in Figure 2. The proposed Coast Boulevard Walkway Improvements Project will start in June and end in December, generally corresponding to initially high abundances followed by declining seasonal abundances.

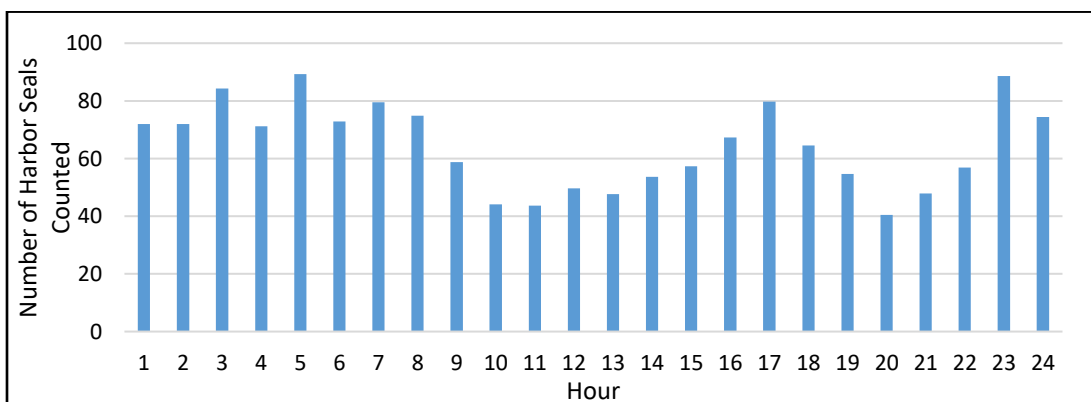


Note: A third order polynomial curve was fit to counts.

**Figure 2. Hourly Harbor Seals Counts at Children's Pool Beach, South Casa Beach, Seal Rock, and the Reef Area Outside the Childrens Pool Break Wall (Hanan and Associates 2017).**

#### *Daily Use Patterns*

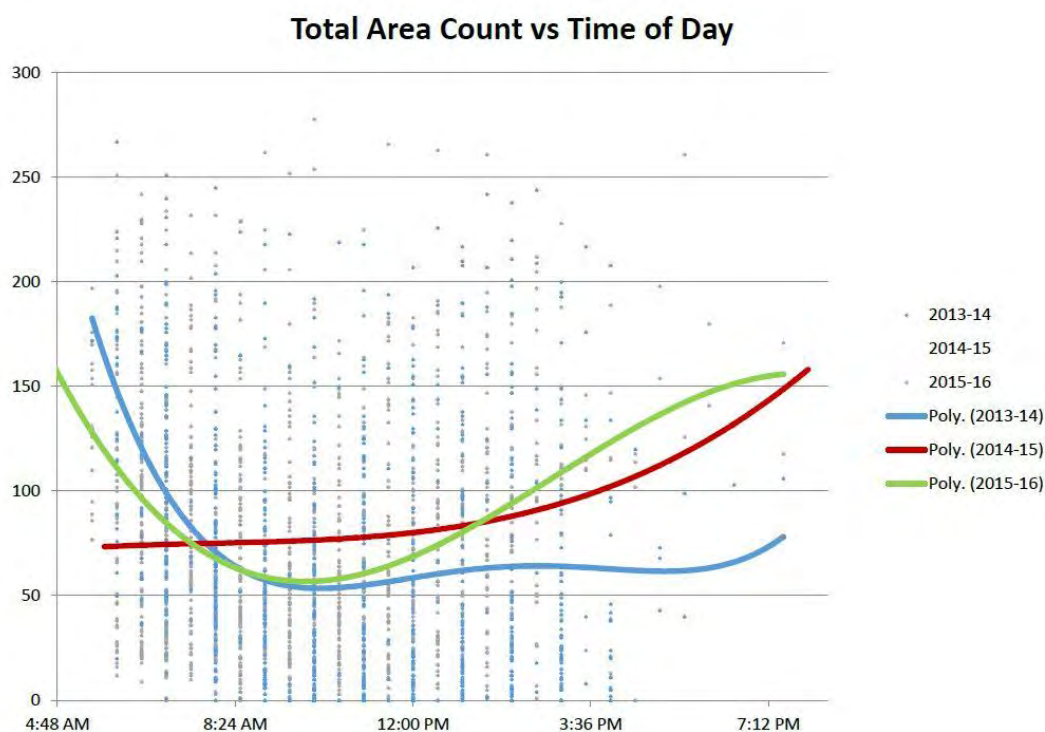
Based on docent data (Seal Conservancy 2016), harbor seal abundance at the Children's Pool haul out varies during the day, generally being highest during early morning hours, lower but fluctuating during the day, and increasing after dark (Figure 3). This data is also supported by recent surveys during the initial phase of this project at the Children's Pool, with a decrease in harbor seal numbers during the mid-morning, likely attributed to an increase in human presence in the area (City of San Diego 2017).



**Figure 3. Summary of Average Harbor Seal Counts at Children's Pool on a per Hour Basis (2014 to 2016).**

Differences in harbor seal use patterns of haul outs between early morning and other daytime periods also was observed during marine mammal monitoring associated with the issued IHA for the

demolition and construction activities at the Children's Pool Lifeguard Station (Figure 4). While total seal counts during monitoring were highly variable, there was an overall decreasing trend after 6 a.m. and more observations with lower counts during the day. Using data that generated Figure 2, it was calculated that an hourly mean of 54.5 harbor seals, including pups, were hauled out at Children's Pool beach over a 3-year period (Hanan, D.A. pers. comm. 2017).



**Figure 4. Number of Harbor Seals Hauled Out by Time During the Children's Pool Lifeguard Station Construction Monitoring (Source: Hanan & Associates 2014).**

During the proposed timeframe for project-related activities (June 1 to December 14, 2018), there are up to 164 days available for construction (based on work from Monday through Saturday, and no work on all applicable California and Federal holidays), with 108 days (66% of the total available days) where predicted noise could exceed Level B acoustic thresholds for pinnipeds (100 dB and 90 dB) caused by source noise levels of 110 dB. According to San Diego Municipal Code Section 59.5.0404, construction is restricted between 7 p.m. (1900) and 7 a.m. (0700). However, to account for the changing hours of daylight throughout the construction timeframe and the requirement to visually monitor hauled out pinnipeds, construction activities will be limited to daylight hours (7 a.m. to 7 p.m. or 30 minutes before sunset, depending on time of year).

### *Construction Noise and SPL Zones of Influence*

To determine the distance to in-air noise thresholds (100 dB and 90 dB rms [unweighted]) for the proposed Project, a spherical spreading loss model, assuming average atmospheric conditions, was used. The formula for calculating spherical spreading loss is:

$$TL = 20 \log r, \text{ where:}$$

TL = Transmission loss

$r$  = ratio of receiver distance to reference distance (equates to straight line distance from source when reference is at 1 m)

Utilizing manufacturers specifications, the loudest potential source levels of equipment used during activities above the beach would be 110 dB rms. The spherical spreading loss model predicts that the 100 dB rms threshold would be reached at 3 m (10 ft) and the 90 dB rms threshold would be reached at 10 m (33 ft).

During the Children's Pool Lifeguard Station Project, the loudest construction source levels ranged from 100 to 110 dB, and peak sound levels of 90 to 103 dB were at distances within 15 m to 20 m (49 to 66 ft) from construction (see Table 1). Given that similar construction equipment will be used for the Coast Boulevard Walkway Improvements Project, it is estimated that the ZOI associated with the in-air Level B acoustic threshold for harbor seals (90 dB rms) may extend up to 10 to 20 m (33 to 66 ft) from construction during maximum sound source levels (110 dB rms). It is estimated that the distance to the acoustic threshold for other pinnipeds (100 dB rms) would be less than 10 m (33 ft) during maximum construction sound source levels.

### *Take Estimates*

There are approximately 2,509 m<sup>2</sup> (0.62 acre) of available pinniped habitat between the guideline rope and the mean lower low water line at Children's Pool (Figure 5, blue hatch-line area). Based on a worst-case scenario using the loudest source sound level (110 dB rms), and a conservative assumption of the 90 dB rms harbor seal Level B harassment threshold extending to 20 m (66 ft), a total of 647 m<sup>2</sup> (0.16 acres, or 25.8%) would be within the 90 dB rms ZOI (Figure 5, green hatch-line area).

To estimate the number of Level B "takes" for harbor seals, the mean number of harbor seals observed each day during the Lifeguard Tower Construction project (55 harbor seals per day, Hanan, D.A. pers. comm. 2017) was multiplied by the potential area exposed to sound of 90 dB rms or higher (25.8% of the available haulout area) to calculate the mean number of harbor seals (14.19, rounded to 15) potentially inside of the ensonified Level B harassment ZOI per day and multiplied that number by the proposed number of days of activity where sound could exceed Level B in-air acoustic thresholds (108 days), as follows:

Harbor seals: 15 (daily mean number of harbor seals within Level B ZOI) x 108 (days potentially exceeding Level B in-air acoustic thresholds) = 1,620 total "takes".

Construction will not occur during the Seal Pupping Season Moratorium (December 15 to May 15, with an extension to May 31 to account for late weaning pups), and all harbor seals would be expected to be adults or juveniles. Based on age and sex ratios, Hanan & Associates (2014) estimated a nearly equal proportion of adult females and males (27 to 28%) and juvenile female and males (19 to 21 %) potentially using the Children's Pool haul out. Based on these same ratios, the estimated "takes" for the Coast Boulevard Walkway Improvements Project by sex and age would be, as follows:

1,620 total “takes” by sex and age:

Males:

Adults: 437 harbor seals  
Juvenile: 308 harbor seals

Females:

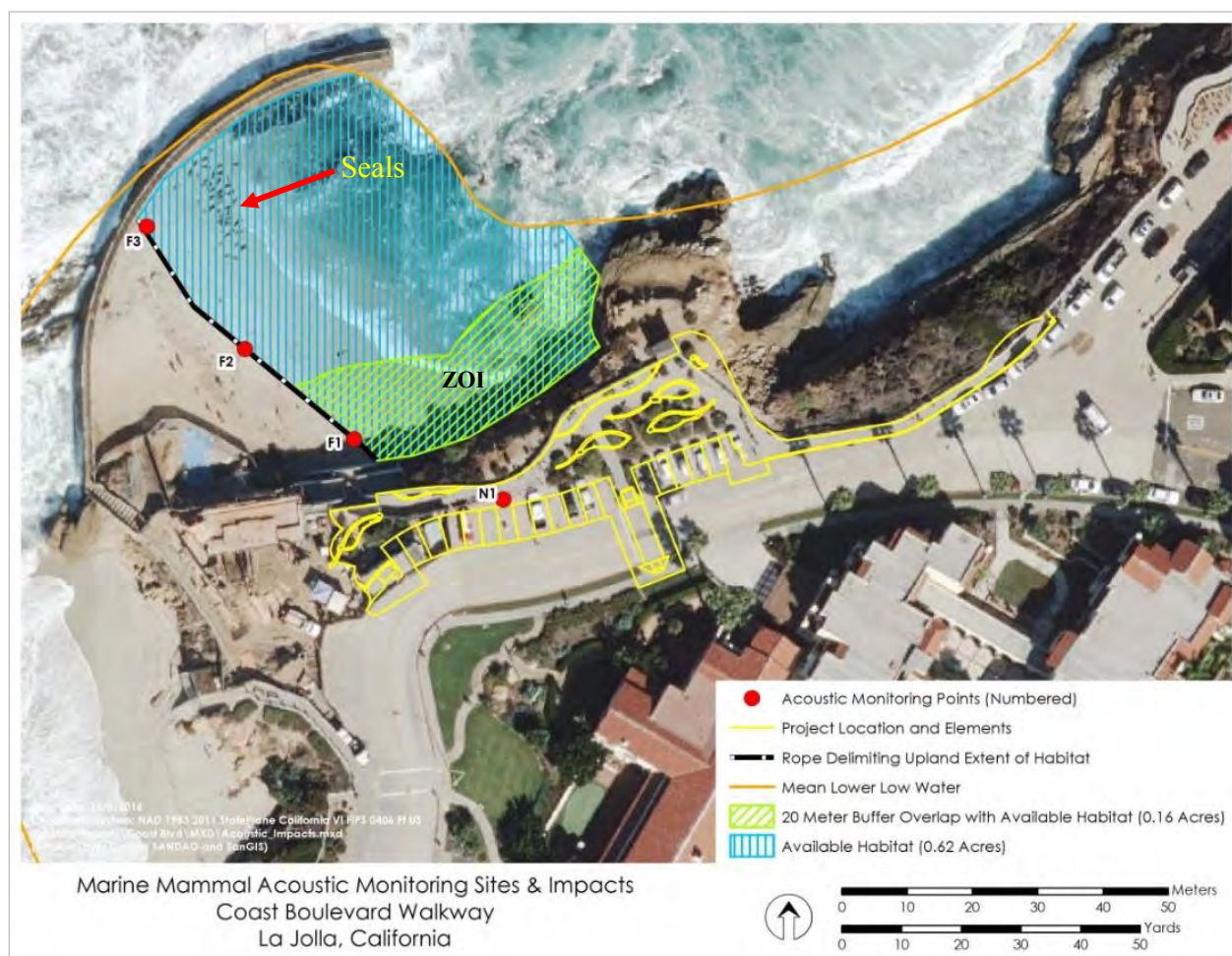
Adults: 454 harbor seals  
Juveniles: 340 harbor seals

Unknown Age/Sex:

81 harbor seals

Because harbor seals using the Children’s Pool haul out include both resident and transient individuals, it is difficult to estimate the number of individual animals that may be exposed to incidental, Level B harassment associated with demolition and construction noise from the project. Assuming that 600 individuals may haul out over the course of the year (Linder 2011), and construction would occur over 164 days (45% of year), it is estimated that somewhere between 270 and 600 harbor seals may be exposed to construction activities. However, only a small portion of those individuals would be exposed to Level B “take.” This represents a small number of harbor seals relative to the California population stocks (approximately 5%). The estimated total “take” for harbor seals is considered a reasonable estimate based on the conservative assumptions used in the calculation above. In addition, monitoring conducted between June 2013 and June 2016 during demolition and construction of the Children’s Pool Lifeguard Station Project, and then also during the first phase of this project in July 2017, documented that the majority of construction-related noise did not rise to the Level B harassment acoustic thresholds in areas where harbor seals were hauled out. In addition, in 2013 there was a relatively small number of harbor seal reactions to construction activities (23.8% alerts and 8.8% flushes) compared to the total number of reactions observed (Hanan & Associates 2014). By far the greatest number of harbor seal disturbance reactions (55.1% of total; 32.6 % alerts, 22.6% flushes) were assigned to public use of the area. Similar results occurred in 2015-2016 (Hanan & Associates 2017). For the monitoring efforts in July 2017 during the testing of retaining walls for structural integrity, there were no reactions to project-related activities that would have been considered as “take,” and only seven instances of an “alert” reaction to project-related activities.





**Figure 5. Potential Level B Harassment (90 dB rms) ZOI and Example Monitoring Locations.**

### Other Pinnipeds

California sea lions and northern elephant seals use the Children's Pool beach and the rocks of the Children's Pool much less frequently than harbor seals. During monitoring of the Children's Pool Lifeguard Station demolition and construction (Hanan & Associates 2014), three (3) California sea lions and two (2) northern elephant seals were observed using the Children's Pool beach. Children's Pool docent data from 2014 to 2016 (Seal Conservancy 2016), documented that California sea lions were observed at the beach on 67 days in 2014, 14 days in 2015, and 95 days in 2016. Northern elephant seals used the beach on 38 days in 2014, 36 days in 2015, and on one day in 2016 (as of early November). Only 1 to 2 California sea lions and 1 northern elephant seal, on average, were observed per day. Furthermore, California sea lions and northern elephant seals were infrequently observed over the 201 days of the Children's Pool Lifeguard Station project with 71 and 26, individuals recorded, respectively. There were no documented Level B "takes" of California sea lions or northern elephant seals during the three years of the Lifeguard Tower construction.

Based on the data from the Children's Pool Lifeguard Station, there was a mean of 1 California sea lion observed on the Children's Pool beach for every 3 days of construction and 1 northern elephant seal observed for every 8 days of construction. Using these ratios for the Coast Blvd project, and given a duration of 108 days with potential sound levels of 100 to 110 dB, we estimate that 36 California sea lions and 13.5 (rounded to 14) northern elephant seal will be encountered. To be conservative, we

assume that all individuals observed may be “taken” via Level B harassment. These estimated “takes” represent a very small number of California sea lions and northern elephant seals (much less than 1%) relative to the California population stocks for these species.

If Marine Mammal Observers (MMOs) observe a pinniped species not addressed in “take” estimates on the rocks, beach, or in the water at Children’s Pool prior to, or during, project-related activities, MMOs will immediately alert the City and the stranding network. All project-related activities will be suspended until coordination with the stranding network is complete (including any potential 24-hour or 48-hour wait/observation period) and/or the animal either leaves, or is collected by the stranding network. Recommendations of the stranding coordinator will be followed, which may include a 24-hour or 48-hour waiting and observation period, and activities would not commence until the animal(s) either vacated the area on its own, or was collected by the stranding network.

## **7. Anticipated Impact of the Activity**

*("The anticipated impact of the activity to the species or stock of marine mammal.")*

Level B harassment “take” associated with this project is not expected to affect nor impact harbor seals, California sea lions, or northern elephant seals at the species or stock level. Furthermore, because construction will not occur during the pupping season (December 15 through May 15) there will be no impacts on birthing rates nor on pup survivorship at the Children’s Pool.

The estimated number of individual harbor seals that use the beach (up to 600 in any given year) are a small proportion of the overall population. Utilizing the stock estimate of 30,968 harbor seals (Caretta et al 2016), only a small portion of this population may be exposed to SPLs of 90 dB rms or greater on a daily basis during project activities. Using a projected exposure estimate of 15 animals per day, 5.2% of the overall harbor seal population may be exposed to sound greater and 90 dB rms daily.

For California sea lions and northern elephant seals, on average, less than one to two animals per day for each species would be potentially exposed to project activities. This represents a very small percentage relative to the overall stock estimates of 296,750 California sea lions and 179,000 northern elephant seals.

## **8. Anticipated Impacts on Subsistence Uses**

*("The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.")*

There will be no impact on subsistence uses because the project is not anticipated to impact natality, mortality, or survivorship of pinniped stocks.

## **9. Anticipated Impacts on Habitat**

*("The anticipated impact of the activity upon the habitat of the marine mammal populations and the likelihood of restoration of the affected habitat.")*

All construction activities will occur 5 to 12 m (16 to 40 ft) above the Children’s Pool beach and no construction activities will occur on the beach itself or in the water. Thus, all activities will be outside of seal or sea lion habitat.

## **10. Anticipated Effects of Habitat Impacts on Marine Mammals**

*("The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.")*

Because the project impacts will be restricted to an area from 5 to 12 m (16 to 40 ft) above the Children's Pool beach, there will be no loss or modification of habitat used by marine mammals.

## **11. Mitigation Measures**

*("The availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.")*

To minimize the potential for harassment due to project activities, the City is requiring the following mitigation measures (subject to NMFS approval):

- No construction activities will occur during the harbor seal pupping season (December 15 to May 15).
- Construction will be limited to daylight hours only (7 a.m. to 7 p.m., or 30 minutes before sunset depending on time of year).
- Construction activity involving use of very loud equipment (e.g., jackhammers on excavators or bobcats) will be scheduled between the hours of 8:30 a.m. to 3:30 p.m. to the maximum extent practical, but may be extended from 7 a.m. to 7 p.m. (daylight hours only) to help ensure the project is completed within the 2018 work window.
- A qualified MMO will monitor and document potential impacts from demolition and construction activities.
- The project will monitor and record airborne noise during demolition and construction activities with a sound level measuring device.

Appendix C provides a monitoring plan that is being submitted as part of this IHA Application. All details regarding specific monitoring protocols, data collection, and reporting are provided in that document.

## **12. Arctic Plan of Cooperation**

*("Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, you must submit either a plan of cooperation (POC) or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses.")*

Not applicable. Construction activities are not in the Arctic.

## **13. Monitoring and Reporting**

*("The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding.")*



A monitoring plan has been developed that addresses both acoustic and marine mammal monitoring during demolition and construction activities (Appendix C). The acoustic monitoring will verify the distances to the in-air SPL disturbance thresholds (90 dB rms for harbor seals; 100 dB rms for California sea lions and northern elephant seals) based on collection of data at several locations (see Figure 5). The marine mammal monitoring will document the number of species, behavior, and reactions of animals to construction-related activities compared to other sources of disturbance, as applicable. The monitoring will detect and document impacts from construction activities and assess the effectiveness of applied mitigation measures in minimizing disturbance of marine mammals during construction. Results of the monitoring will permit refinement of “take” estimates associated with construction. A draft report would be submitted to NMFS within 60 calendar days of the completion of acoustic measurements and marine mammal monitoring. A final report would be prepared and submitted to NMFS within 30 days following receipt of comments on the draft report from NMFS. If no comments on the draft report are received from NMFS, the draft report shall be considered final.

If a MMO observe a pinniped species (e.g., fur seals) not addressed in “take” estimates on the rocks, beach, or in the water at Children’s Pool during activities, MMOs will immediately alert the City and the stranding network. All project-related activities will be suspended until coordination with the stranding network is complete and/or the animal either leaves, or is collected by the stranding network. Recommendations of the stranding coordinator will be followed, which may include a 24-hour or 48-hour waiting and observation period, and activities would not commence until the animal(s) either vacated the area on its own, or was collected by the stranding network.

#### **14. Suggested Means of Coordination**

*("Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.")*

Each demolition/construction phase and potential harassment activity will be evaluated relative to observed sound levels and pinniped reaction by type of sound source. The effectiveness of mitigation measures will be discussed in the monitoring report and recommendations made to improve effectiveness, as warranted. The monitoring report will provide information useful for evaluating potential effects or permitting of future projects.

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**FINAL**  
**ACOUSTIC AND MARINE MAMMAL MONITORING PLAN**  
**FOR THE CITY OF SAN DIEGO'S**  
**COAST BOULEVARD WALKWAY IMPROVEMENTS**

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Submitted to:

**Office of Protected Resources,  
National Marine Fisheries Service,  
National Oceanographic and Atmospheric Administration**

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**December 2017**

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## **TABLE OF CONTENTS**

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Purpose and Objectives of the Monitoring Plan .....	1
1.2	Project Description.....	2
1.3	Project Area .....	2
1.4	Timing and Duration.....	3
<b>2</b>	<b>Coast Boulevard Improvement Project Monitoring Plan Methods.....</b>	<b>3</b>
2.1	Activities Monitored During this IHA Period.....	3
2.2	Monitoring Equipment Used During Project-Related Activities .....	4
<b>3</b>	<b>Acoustic and Environmental Monitoring.....</b>	<b>4</b>
3.1	Objectives .....	4
3.2	Methods.....	4
3.2.1	Acoustic Data Collector Qualifications .....	6
3.2.2	Acoustic and Environmental Data Collection.....	6
<b>4</b>	<b>Marine Mammal Monitoring .....</b>	<b>9</b>
4.1	Objectives .....	9
4.2	Methods.....	9
4.2.1	Marine Mammal Observer Qualifications .....	9
4.2.2	Marine Mammal Monitoring Data Collection .....	10
<b>5</b>	<b>Interagency Coordination.....</b>	<b>12</b>
<b>6</b>	<b>Reporting .....</b>	<b>12</b>
<b>7</b>	<b>Activities Associated with Subsequent IHAs .....</b>	<b>13</b>
<b>8</b>	<b>References .....</b>	<b>14</b>

## **LIST OF FIGURES**

Figure 1. Project Location and Known Haul Out Sites in the Project Area.....	2
Figure 2. Potential Level B Harassment (90 dB rms) ZOI and Example Monitoring Locations.....	6

## **LIST OF TABLES**

Table 1. In-Air Sound Disturbance Thresholds for Pinnipeds.....	1
Table 2. Summary of Acoustic Data Collected During the City Lifeguard Station Demolition and/or construction Monitoring (Source: Hanan & Associates 2014). ....	5
Table 3. Types of Responses to Noise and Definitions. ....	11

## **ACRONYMS**

$\mu\text{Pa}$	micropascal
dB	decibel(s)
ft, ft <sup>2</sup>	feet, square feet
IHA	Incidental Harassment Authorization
m, m <sup>2</sup>	meters, square meters
MMO	Marine Mammal Observer
NIST	National Institute of Standards and Technology
NMFS	National Marine Fisheries Service
re 20 $\mu\text{Pa}$	referenced to 20 micropascals (for in-air sound)
rms	root mean square
SLM	Sound Level Meter
SPL	sound pressure level
ZOI	zone of influence



## 1 INTRODUCTION

This Acoustic and Marine Mammal Monitoring Plan was developed in support of the City of San Diego's (City's) Incidental Harassment Authorization (IHA) application for the Coast Boulevard Walkway Improvements Project (Project), La Jolla, California. The requested IHA is for potential Level B harassment only during Project implementation to the following marine mammal species: Pacific harbor seal (*Phoca vitulina richardii*), California sea lion (*Zalophus californianus*) and northern elephant seal (*Mirounga angustirostris*). The IHA application provides more in-depth discussions of the Project, occurrences of these species, and estimates of potential "take" by Level B harassment (behavioral disturbance), and are incorporated herein by reference.

### 1.1 Purpose and Objectives of the Monitoring Plan

The purpose of this Monitoring Plan is to provide protocols for acoustic and marine mammal monitoring to assess the potential for project-related effects on marine mammals from the proposed Project. The objectives of the Monitoring Plan are to observe and document real-time sound levels in the Project Area and refine estimated "take" of marine mammals by Level B harassment in the form of behavioral disturbance in response to project-related activities. The Level B harassment will also be assessed in relation to in-air sound pressure level (SPL) disturbance thresholds (Table 1).

**Table 1. In-Air Sound Disturbance Thresholds for Pinnipeds.**

<b>Pinnipeds</b>	<b>Sound Pressure Level (SPL) re 20 <math>\mu</math>Pa (unweighted)</b>
Harbor seal	90 dB rms
Other species	100 dB rms

Source: NMFS 2016

Notes: SPL is referenced to 20 micropascals (re 20  $\mu$ Pa) for in-air sound  
dB rms = decibels root mean square

These objectives will be achieved by the following methods:

1. Acoustic monitoring will be used to measure in-air sound pressure levels (SPL) during ambient conditions and during Project activities to determine the distances within which typical Level B acoustic harassment disturbance may occur, as defined by the 90 and/or 100 dB rms zones of Influence (ZOIs), as applicable.
2. Visual monitoring of marine mammals will be conducted at the Children's Pool below the Project site during ambient conditions and during Project activities to assess the number and species, behavior, and reactions of marine mammals to project-related activities compared to other sources of disturbance, as applicable.

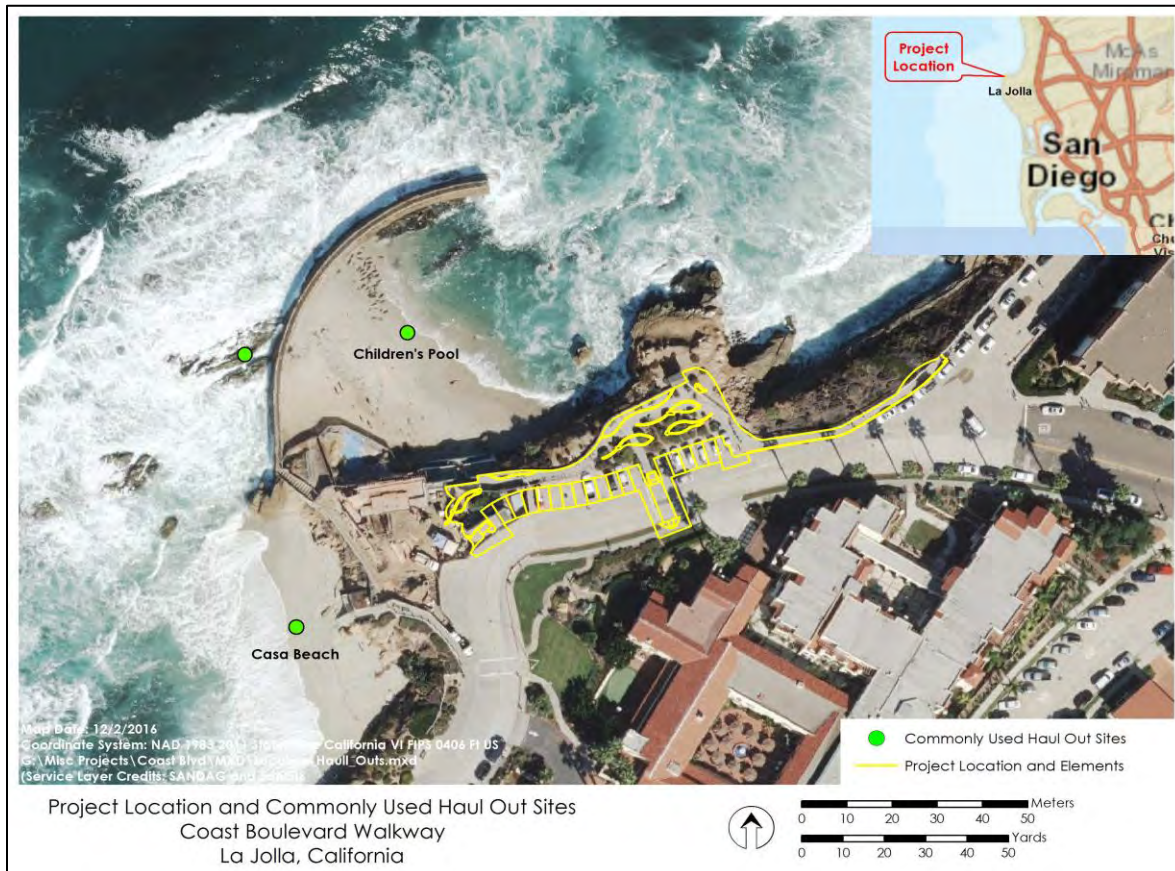
Monitoring will be conducted before, during, and after project-related activities to evaluate the influence of the Project on marine mammals. The monitoring will document the number of each marine mammal species potentially exposed to Level B harassment that would constitute "take" under the Marine Mammal Protection Act (MMPA). Implementation of this Monitoring Plan will be managed by City of San Diego (City).

## 1.2 Project Description

The Coast Boulevard Walkway Improvements Project consists of improvements to an existing public parking lot, sidewalk, and landscaping areas, with project-related activities planned to start on June 1, 2018 and be completed by December 14, 2018. Demolition of portions of the site will occur prior to, and concurrently with, construction activities. The IHA Application provides further detail on the exact types of activities, equipment potentially used, and the number of days of potential activity during the IHA timeframe.

## 1.3 Project Area

The Project Site is located approximately 5 to 12 m (16 to 40 feet [ft]) above mean sea level (Figure 1) above the Children's pool beach. The western portion of the site overlooks the Children's Pool, a public beach. The beach and rocks at the Children's Pool and adjacent Casa Beach are used as haul out locations by pinnipeds, primarily Pacific harbor seals, and to a much lesser extent California sea lions and northern elephant seals. Harbor seal abundances in the Project Area vary seasonally, with peaks during their pupping and molting periods, which generally range from January to May (Hanan & Associates 2004, 2011).



**Figure 1. Project Location and Known Haul Out Sites in the Project Area.**

The City has designated the Children's Pool as a shared-use beach, with the beach and surrounding waters used for swimming, surfing, kayaking, diving, tide pooling, and nature watching. The harbor seals, in

particular, draw many nature watchers. During the harbor seal pupping season, the beach is closed to the public. Outside of the pupping season, beach access and recreational uses are permitted, provided that there is no direct harassment of the harbor seals. A guideline rope strung along the upper part of the beach at Children's Pool, as well as signage on the beach, beach access stairs, and overlooks encourage the public to respect the seals in the area and view them at a safe distance.

#### **1.4 Timing and Duration**

The proposed Project is planned to start June 1, 2018 and be completed by December 14, 2018. There are 164 available days for demolition and/or construction during this timeframe based on work occurring from Monday through Saturday, and no work on all applicable California and Federal holidays. Of those 164 days, 108 days are expected to occur with sound levels that may exceed the regulatory thresholds of the 90 and/or 100 dB rms. The number of available work days within a year are limited by the Seal Pupping Season Moratorium and so the IHA applies from June 1, 2018 to December 14, 2018. Demolition or construction will avoid the Seal Pupping Season Moratorium (which runs from December 15 to May 15, but has been extended to May 31 for this Project to account for any late weaning pups). Demolition or construction will also be limited to daylight hours (between 0700 and 1900, or to 30 minutes before sunset depending on time of year).

## **2 COAST BOULEVARD IMPROVEMENT PROJECT MONITORING PLAN METHODS**

### **2.1 Activities Monitored During this IHA Period**

Monitoring will be conducted during each phase of demolition and/or construction of the Coast Boulevard Walkway Improvements Project. Demolition activities will include the removal of existing parking lot paving; concrete curb, gutter, and sidewalk; concrete removal; and the removal of existing irrigation and plant materials. Project-related activities will include subgrade preparation, asphalt paving, and marking of parking stalls; pouring of concrete curb, gutter, and sidewalk; construction of rock walls, installation of fencing, placement of landscape boulders, installation of landscaping and irrigation; and finishing and clean up. Refer to the California Environmental Quality Act Mitigated Negative Declaration for a more detailed Project description (Appendix A of the IHA application).

Some of the equipment utilized during Project activities will likely generate sound levels that meet or exceed in-air sound disturbance thresholds for the seals and sea lions that may use the haul out locations at, and adjacent to, the Children's Pool. Other equipment and activities will produce sound levels far below regulatory thresholds in areas where the pinnipeds may occur.

Acoustic and Environmental Monitoring (Section 3) and Marine Mammal Monitoring (Section 4) will occur during all phases of demolition and/or construction. The level of acoustic monitoring effort during each phase of the project may vary, depending on the actual measured sound levels, whereas marine mammal monitoring will be during all demolition and/or construction activities. It is expected that sound levels recorded at marine mammal haul out locations during the proposed activities will be similar or less than those measured during recent demolition and/or construction of the Children's Pool Lifeguard Station (Hanan & Associates 2014) or during the retaining wall testing in July 2017 (City of San Diego 2017) due to a greater distance between the proposed Project and haul out locations, and lower sound levels produced by some the construction components.

## **2.2 Monitoring Equipment Used During Project-Related Activities**

The following equipment will be required to conduct acoustic measurements and marine mammal monitoring:

- In-air Sound Level Meter (SLM) and microphones
- Hearing protection for monitoring sound levels near the source.
- Cellular phone, and the contact information for the Construction Manager, City Representative, NMFS, and Sea World San Diego's stranded animal hotline.
- Watch or chronometer.
- Binoculars with built-in compass (quality of 7x50 or better).
- Laser rangefinder.
- Handheld Global Positioning System.
- Monitoring Plan, IHA permit, and/or other relevant permit requirement specifications in a sealable plastic bag or waterproof container.
- Datasheets, hardcopy on waterproof paper (e.g., Rite-in-the Rain) or electronic (tablet computer).
- Marine mammal identification guides on waterproof paper.
- Clipboard.
- Pen / Pencil.

## **3 ACOUSTIC AND ENVIRONMENTAL MONITORING**

### **3.1 Objectives**

The primary purpose of acoustic monitoring is to record in-air SPLs during demolition and/or construction activities, and to determine the zone of influence (ZOI) within which SPLs meet, or exceed, in-air Level B harassment acoustic disturbance thresholds for harbor seals and other pinnipeds. Environmental data will be collected to provide information on the weather, visibility, sea state, and tide conditions during the monitoring surveys.

### **3.2 Methods**

Monitors will collect real-time acoustic data of project-related activities to determine SPL values. In addition, environmental conditions during surveys will be recorded. To determine the initial distance to in-air Level B harassment behavioral disturbance thresholds for harbor seals and other pinnipeds (90 and 100 dB rms re 20  $\mu$ Pa [unweighted], respectively), a simple spherical spreading loss model was used, assuming average atmospheric conditions. The formula for calculating spherical spreading loss is:

$$TL = 20\log r$$

where:

TL = Transmission loss

$r$  = ratio of receiver distance to reference distance (equates to straight line distance from source when reference is at 1 m [3.3 ft])

Utilizing manufacturers specifications, the loudest construction noise near-source levels for several pieces of equipment used as part of this action are expected to be 110 dB rms. The simple transmission loss model above predicts that the 100 dB rms threshold would be reached at 3 m (10 ft) and the 90 dB rms threshold would be reached at 10 m (33 ft). However, data provided in Hanan & Associates (2014), showed peak values of 91 to 103 dB within 15 to 20 m (49 to 66 ft) from the Lifeguard Station construction (Table 2). Therefore, it is assumed the 90 dB rms threshold would be reached between 10 and 20 m (33 and 66 ft) with a source level of 110 dB rms (Table 2).

**Table 2. Summary of Acoustic Data Collected During the City Lifeguard Station Demolition and/or construction Monitoring (Source: Hanan & Associates 2014).**

Equipment	Recording Location			
	Top of Stairs + Casa Beach		Middle of Rope at Children's Pool	
	High	Mean	High	Mean
Backhoe	77.7	73.8	68.7	68.1
Bobcat	91.1	72.9	77.1	65.9
Cement Pump	72.6	70.4	54.7	N/A
Compactor	67.5	66.7	73.9	N/A
Concrete Saw	92.5	75.9	74.3	70
Crane	88.2	75.2	66.2	63.5
Driver/Drill	77.5	73.6	69.6	N/A
Excavator	90.9	75.0	83.8	65.8
Forklift	83.9	76.7	75.7	N/A
Gas Powered Saw	77.7	69.3	58.7	N/A
Generator Powered Jackhammer	86.5	77.8	70.7	69.1
Grinder	71.8	67.8	63.6	61.7
Gun Powder nail gun	69.4	66.2	64.7	61.1
Hack Saw	76.9	72.3	71.0	67.4
Hammer	81.6	70.0	66.5	58.8
Hand Tools	85.1	67.5	64.4	59.9
Impact Driver	80.0	72.5	69.6	65.8
Jackhammer on Bobcat	96.6	76.3	87.0	70.8
Jackhammer on Excavator	103.1	87.3	92.0	N/A
Mini Excavator	89.3	67.9	79.0	63.3
Rebar Saw	71.0	69.0	64.2	N/A
Shovel	65.4	62.8	61.7	60.5
Survey Equipment	63.2	63.1	58.5	N/A

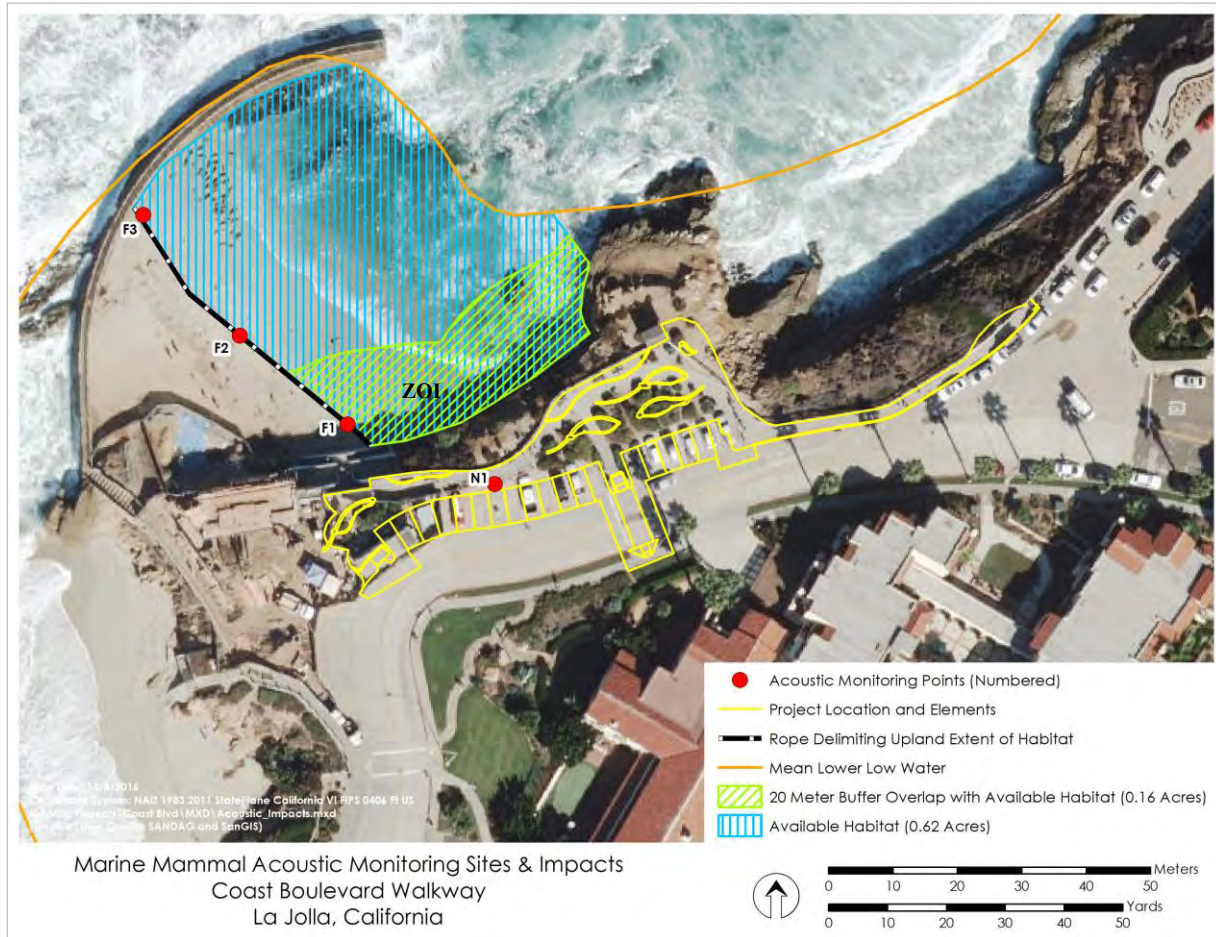
Notes: The Top of Stairs+Casa Beach location was closest to the construction source, and the Middle Rope at Children's Pool was located at the Level B sound buffer demarcation. N/A=One Sample

A guideline rope, oriented parallel to the water, bisects the beach into upper and lower beach areas. As a result, there are approximately 2,509 square meters (m<sup>2</sup>) (0.62 acres) of lower beach seaward of the guideline rope boundary and the mean lower low water line (see blue hatching lines in Figure 2). During the loudest construction activities (110 dB rms at source), a little more than one-quarter (647 m<sup>2</sup> [0.16 acre], or 25.8%) of the available haulout area on Children's Pool beach may be within the 90 dB rms ZOI (see green cross hatching lines in Figure 2). However, depending on the acoustic data collected during actual



construction, the 90 dB rms ZOI may either expand, shrink, or not be recorded due to lower sound levels during construction.

Acoustic data will be monitored at multiple locations near demolition and/or construction (see N1 in Figure 2 for an example location) as well as at far-field (F1, F2, F3) locations to establish ambient sound levels at the Children's Pool, determine sound levels during project-related activities, and assess whether sound levels reach Level B harassment thresholds in areas used by marine mammals.



**Figure 2. Potential Level B Harassment (90 dB rms) ZOI and Example Monitoring Locations.**

### **3.2.1 Acoustic Data Collector Qualifications**

Acoustic data collection will be conducted by qualified data collectors with the following minimum qualifications:

- Trained in the SLM that is chosen to record acoustic data.
- Understand how to process the data after it has been collected.

### **3.2.2 Acoustic and Environmental Data Collection**

The survey approach includes collection of acoustic data by a dedicated acoustic observer during each new phase of demolition and/or construction to establish baseline values for each phase. The SLM will be used to document SPLs at near-field and far-field locations during all surveys, and to determine the boundary

distances for Level B acoustic threshold ZOIs for harbor seals and other pinnipeds, as applicable (Figure 2). The total number and locations of the monitoring stations will be determined during each survey based on the location of project-related activities and likelihood for sound levels to meet or exceed in-air SPL disturbance thresholds in areas where marine mammals are observed at the Children's Pool.

The following data will be collected during the acoustic and environmental surveys (datasheet is provided in Appendix A):

- Dates and times of observations.
- Location of observations (description, latitude/longitude).
- Environmental conditions (e.g., air temperature, Beaufort sea-state, visibility, wind speed and direction).
- Tide level and water temperature (from NOAA Tides and Currents website).
- Phase, activities and equipment. Any substantial change in activities or equipment during observation periods should be noted.
- Acoustic data will be recorded for at least two minutes at each monitoring location. The SLMs will be placed on tripods at a height of five feet to collect the in-air sound levels. The maximum SPL dB rms (unweighted) value will be recorded.
- Activity start and stop times.

The following protocols will be followed:

- All microphones and recording systems will be calibrated prior to deployment for each survey day to ensure proper operation. All sensors, signal conditioning equipment, and sampling equipment will be calibrated at least once per week to National Institute of Standards and Technology (NIST) standards.
- Upon arrival at the site each day, the monitor will complete the Consultant Site Visit Record, as required by the City.
- At the start of each new phase (i.e., a different type of construction activity and equipment), a full-day of acoustic monitoring will occur, which will include a Pre-Activity Survey, hourly Activity Surveys, and a Post-Activity Survey.
- Acoustic monitoring on the beach should be behind the guideline rope to minimize potential disturbance to hauled out marine mammals.
- *Pre-Activity Surveys*
  - At least 30 minutes prior to the start of demolition and/or construction activities, the acoustic monitor will record the time of observations, environmental conditions, and maximum ambient SPLs at a location at the top of the bluff adjacent to the Project Site (see N1 in Figure 2 for an example location), and at three far-field locations (F1, F2, F3). Acoustic and environmental monitoring data will be collected, as noted above.
- *Activity Surveys*
  - Every hour, the monitor will record time of observations, environmental conditions, and maximum SPLs at near-field (N1 and N2, as applicable) and far-field (F1, F2, F3) locations. If applicable, the ZOI boundary location(s) will be determined and the SPLs recorded. The N1 station will be as close to possible to 15.2 m (50 ft) from the source of the noise. This will reduce the potential for exposure to loud noises in the area that might exceed dB levels associated with project-related equipment. The N2 station will be mobile and will be as close

as possible to a location that is in-between the activity and hauled out animals on the Children's Pool beach.

- The acoustician will also note the start and end times of project-related activities that may have an acoustic impact.
- *Post-Activity Survey*
  - At least 30 minutes after to the completion of demolition and/or construction activities, the acoustic monitor will record the time of observations, environmental conditions, and maximum ambient SPLs at a location at the top of the bluff adjacent to the Project Site (see N1 in Figure 2), and at three far-field locations (F1, F2, F3). Acoustic and environmental monitoring data will be collected, as noted above.

The number of days of acoustics monitoring required after the first day of monitoring (noted above) for each new construction phase will depend on the results of the acoustic monitoring, as follows:

- A. If acoustic monitoring on the first day of a new phase documents sound levels of 90 dB rms or greater at any far-field location, and can be directly attributed to project-related activities, then daily monitoring will be required throughout that phase of construction.
- B. If acoustic monitoring on the first day of a new phase documents sound levels of 90 dB rms or greater at the near-field locations, but not at any far-field location, then a minimum of two additional days of monitoring will be required to confirm far-field sound levels remain less than 90 dB rms for demolition and/or construction phase durations of less than 4 weeks. Acoustic monitoring will be conducted weekly to confirm far-field sound levels remain less than 90 dB rms for phases with durations of greater than 4 weeks. If during the additional monitoring, sound levels of 90 dB rms or greater are recorded at any far-field location, then daily monitoring will be required until the end of that phase
- C. If acoustic monitoring on the first day of a new phase documents sound levels of less than 90 dB rms at the near-field locations, then one additional day of monitoring will be conducted to confirm near-field sound levels remain less than 90 dB rms. If a sound level of greater than 90 dB rms is measured at the near-field locations on the second day of monitoring, then additional days of monitoring will be conducted consistent with the specification listed under item B above.

#### Monitoring Locations.

- *Near-Field*
  - At a minimum, data will be collected at one location that is 15.2 m (50 ft) from the active demolition and/or construction (N1). This location will be a mobile station that will move based on the actual location of demolition and/or construction activities. If multiple activities are occurring at the same time, the acoustic technician will take multiple readings at 15.2 m (50 ft) from each activity.
  - If project-related activities exceed 90 dB rms at the N1 monitoring station, acoustic data will be recorded at an additional near-field (N2) location in the area overlooking the Children's Pool. The position of the N2 station will be located at some point between the active demolition and/or construction and any marine mammals on the Children's Pool beach.
- *Far-Field*
  - Three fixed monitoring stations will be established parallel to the guideline rope; F1 – western end of beach, F2 – middle of rope, F3 – eastern end of beach.



- *Acoustic Threshold ZOIs*
  - If SPLs of 90 dB rms or greater are measured at any of the far-field station, and can be directly attributed to project-related activities, additional monitoring will be conducted to determine the far-field boundary of the 90 dB rms ZOI, and 100 dB rms ZOI, as applicable. The ZOI station(s) will be mobile locations based on the real-time SPLs measured during monitoring.

## **4 MARINE MAMMAL MONITORING**

### **4.1 Objectives**

The primary objective of monitoring is to detect and document impacts from project-related activities. Monitoring will be conducted at all times during demolition and/or construction to assess marine mammal use patterns and behavioral responses on the Children's Pool beach both within and outside the Level B harassment ZOIs, as determined by the acoustic monitoring during the demolition and/or construction activities.

### **4.2 Methods**

The marine species monitoring component of this Monitoring Plan was developed to take into consideration the logistical and environmental requirements for working in the Project area. The area potentially exposed to demolition and/or construction noise above the harbor seal in-air SPL disturbance threshold (90 dB rms) will vary (either larger or smaller) depending on the actual demolition and/or construction activities and will be used to determine the ZOI; however, behavioral "take" will be assessed for the whole of the Children's Pool beach and not just the ZOI.

Marine mammal observations may be made from vantage points on the beach or from overlook areas that provide an unobstructed view of the whole beach. Monitoring on the beach should be behind the guideline rope to minimize potential disturbance to hauled out marine mammals. The location of observations will be recorded.

#### **4.2.1 Marine Mammal Observer Qualifications**

Marine mammal monitoring will be conducted by a qualified marine mammal observer (MMO) with the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface, with the ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- A minimum of a Bachelor's degree in biological science, wildlife management, mammalogy, or related field;
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Experience or training in the field identification of marine mammals, and identification of marine mammal behavior;
- Sufficient training, orientation, or experience with the demolition and/or construction projects to provide for personal safety during observations;

- Ability to communicate orally, by radio or in person, with Project personnel to provide real-time information on marine mammals observed in the area, as needed; and
- Writing skills sufficient to prepare a report of observations.

#### **4.2.2 Marine Mammal Monitoring Data Collection**

The following data will be collected during the marine mammal surveys (datasheet is provided in Appendix A):

- Dates and times of marine mammal observations.
- Location of observations (description).
- Project-related activities occurring during each observation period. Any substantial change in activities (especially cessation) during observation periods should be noted.
- Human activity in the area; number of people on the beach, adjacent overlooks, and in the water.
- Counts by species of pinnipeds, and if possible sex and age class.
- Number and type of responses to disturbance, such as alert (raising of head), flush (moving into the water), vocalization, or other with a description (e.g., moving more than 1 m but not into water, moving less than 1 m, changing direction of movement). If no response observed, record as none.
- Apparent cause of reaction (e.g., the Project, aircraft, human activity, other pinniped (intra- or interspecific interaction), other animal, swimmer/diver, watercraft, or other with a description). If the cause of the reaction cannot be determined, then note the behaviors as “CBD” (Could not Be Determined).
- During monitoring surveys, if any injured, sick, or dead marine mammals are observed, procedures outlined in Section 5.0 should be following regarding notifying the appropriate authorities.

The following protocols will be followed:

- At least one MMO will be required to observe the whole of the Children’s Pool beach during all demolition and/or construction activities.
- Upon arrival at the site, the MMO will complete the Consultant Site Visit Record, as required by the City.
- If inclement weather limits visibility, the MMO will perform monitoring to the extent practical.
- Monitoring on the beach should be behind the guideline rope to minimize potential disturbance to hauled out marine mammals.
- *Pre-Activity Surveys*
  - At least 30 minutes prior to Project activities, the MMO will scan the Children’s Pool using binoculars or the naked eye to identify locations where pinnipeds are visible. Marine mammal monitoring data (as noted above) will be collected for the entire Children’s Pool area. The data will be recorded within segments associated with different habitat and distance, as follows: Children’s Pool beach (e.g., F3 to F2, F2 to F1, FX to ZOI, ZOI to F1) and Rocks (e.g., Seawall ledge/adjacent rocks).
  - All behavioral reactions identified in Table 3 will be logged during the 30-minute pre-activity survey, though none will be identified as a “take” by the Project.
- *Activity Surveys*
  - At all times of demolition and/or construction activities, marine mammals displaying behavioral reactions to disturbance will be assessed for the apparent cause of disturbance based

on the responses identified in Table 3. If Level 2 and 3 reactions are deemed as related to the project, they will be considered behavioral “take” regardless of location on the beach.

- Every hour, the MMO will record time of observations and collect marine mammal monitoring data for the entire Children’s Pool area (according to habitat and distance segments), as noted above. Observation data will include:
  - The data identified in Appendix A (Data Sheets) will be recorded for each observation period. Data collected includes: time of observation, survey period, location of animals on the beach, species, number of each age/sex, the number and types of reactions to disturbance, the apparent cause of disturbance, and activity in the project vicinity.
  - Behavioral disturbance will be assessed relative to the three levels in Table 3; though only levels 2 and 3 will be assessed as “take.”

**Table 3. Types of Responses to Noise and Definitions.**

Level	Type of response	Definition
1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal’s body length.
2	Movement	Movements in response to the source of disturbance, ranging from short withdrawals at least twice the animal’s body length to longer retreats over the beach, or if already moving a change of direction of greater than 90 degrees.
3	Flush	All retreats (flushes) to the water.

- *Post-Activity Survey*
  - Monitoring will be conducted 30 minutes after cessation of demolition and/or construction activities. The MMO will record time of observations and collect marine mammal monitoring data for the entire Children’s Pool area (according to habitat and distance segments), as noted above.
  - All behavioral reactions identified in Table 3 above will be logged during the 30-minute post-activity survey though none will be identified as a “take” by the Project.

In the event that a pinniped species not addressed as part of the “take” estimates (e.g., fur seals) is observed on the rocks, beach, or in the water at the Children’s pool during demolition and/or construction, all work will be stopped until coordination with the City and the stranding network has been completed and/or the animal either leaves, or is collected by the stranding network. The contact information for these agencies is below:

- City of San Diego: Christopher Allen, 619-533-4107
- Stranding Network: Jody Westberg, 1-800-540-7325

## **5 INTERAGENCY COORDINATION**

If the City needs to modify the Monitoring Plan because of acoustic monitoring data, or other conditions due to project-related activities and marine mammal species occurrence, the NMFS representative will be promptly contacted for discussion of the requested modification.

In addition, if the City finds an injured, sick, or dead marine mammal, the City will notify NMFS as quickly as possible. The MMO who initially sighted the animal will notify the City representative who will inform the Sea World stranding coordinator of the injured, sick, or dead marine mammal and a decision will be made on whether to collect the animal. If the marine mammal's condition is determined to be a direct result of the Project, additional notification would be made to NMFS headquarters (Ben Laws, 301-427-8425). The City will provide NMFS with a data sheet detailing the species or description of the animal(s), the condition of the animal (including carcass condition if the animal is dead), location, the date and time of first discovery, observed behaviors (if alive), and photo or video (if available).

Care should be taken in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death, if that occurs. In preservation of biological materials from a dead animal, the finder (i.e. the MMO) has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed.

If MMOs observe a pinniped species (e.g. fur seals) on the rocks, beach, or in the water at Children's Pool during activities that are not addressed as part of the "take" estimates, MMOs will immediately alert the City and the stranding network. All Project-related activities would be suspended until coordination with the stranding network is complete (including any potential 24-hour or 48-hour wait/observation period) and/or the animal either leaves, or is collected by the stranding network. Recommendations of the stranding coordinator will be followed, which may include a 24-hour or 48-hour waiting and observation period, and activities would not commence until the animal(s) either vacated the area on its own, or was collected by the stranding network.

## **6 REPORTING**

A draft report will be submitted to NMFS within 60 calendar days of the completion of acoustic measurements and marine mammal monitoring. The results will be summarized in tabular/graphical forms and include descriptions of acoustic sound levels and marine mammal observations according to type of demolition and/or construction activity and equipment. A final report will be prepared and submitted to NMFS within 30 days following receipt of comments on the draft report from NMFS.

At a minimum, the report shall include:

- Introduction
  - Description of the Project-related activities.
- Methods
  - Specific monitoring information:
    - A description of the monitoring equipment.
    - Acoustic data collection for each monitored activity.
    - Marine mammal observational data collection for each monitored activity.
    - Monitoring locations.

- Results

For data collected during the Pre-Activity, during Activity, and Post-Activity Surveys, the following information will be reported and summarized:

- General Data:
  - Date and time of activities.
  - Survey locations.
  - Types of activities and equipment used during each phase of the Project.
  - Duration of each phase
- Acoustic and Environmental Monitoring data:
  - SPLs (dB rms, unweighted) during different phases of demolition and/or construction activities.
  - Distances to applicable in-air Level B harassment ZOIs.
  - Water conditions (e.g., Beaufort sea-state, tidal state, water temperature).
  - Weather conditions (e.g., visibility, air temperature).
- Marine Mammal Monitoring Data:
  - Counts of marine mammals by species, sex and age class.
  - Summary of marine mammal species/count data within and outside in-air acoustic disturbance thresholds (90 dB rms, 100 dB rms).
  - Summary of marine mammal responses to project-related disturbance, and responses to other types of disturbances.
  - Actions performed to minimize effects of sound on marine mammals, as applicable.
  - Times when demolition and/or construction activities were temporarily halted or modified due to presence of non-IHA marine mammals or unauthorized “take”, as applicable.
  - Refined “take” estimates for marine mammal species based on monitoring data.

- Discussion

- Seasonal and daily variations in the abundance of marine mammals at Children’s Pool.
- Relative percentage of the marine mammals within the Level B harassment ZOIs compared to the entire beach.
- Relative percentage of marine mammals observed to react to project-related activities compared to other sources of disturbance.
- Difference between estimates of “take” based on worst-case assumptions made in the IHA application compared to the refined estimates based on monitoring data.
- Assessment of the effectiveness of mitigation measures.

- Conclusion

- Impacts of Project-related activities on marine mammals.

## **7 ACTIVITIES ASSOCIATED WITH SUBSEQUENT IHAS**

If the Project is not able to be completed during the IHA timeframe (June 1, 2018 to December 14, 2018), the City will apply for a subsequent IHA if there would be the potential to cause Level B harassment of marine mammals. A subsequent IHA Application, if applicable, would update the estimated Project-related activities based on the work completed in the previous IHA period. No subsequent IHA would be required if remaining project-related activities would not expose marine mammals to sound levels with the potential to cause Level B harassment.

## **8 REFERENCES**

- City of San Diego (City). 2015. Final Mitigated Negative Declaration Children's Pool Walkway Replacement Project. 48 pages.
- Hanan & Associates. 2004. Biological letter report and recommendations for construction. Regarding pinniped surveys at Children's Pool, La Jolla, California. Unpublished report submitted to the City of San Diego. May 2004. 21 pages.
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## **APPENDIX A**

### **DATA SHEETS AND BEAUFORT SEA STATE SCALE**

Marine Mammal Monitoring Datasheet

Abbreviations: dB=decibel, F=female, M=male, J=juvenile, P=Pup, U=unidentified, Voc=vocalization, BSS=Beaufort Sea State (see attached), Cover=Sky Cover, Vis=Visibility

<sup>1</sup>Type of Survey: Pre-Construction (Pre), Construction Activity (Con), Post-Activity (Post); <sup>2</sup>Beach Segment: F1-F2, F2-F3, Seawall/Rocks; <sup>3</sup>Other Pinniped Count: Add Species Name(s) to Notes and Assign Unique Identifier Code if More than One Species;

<sup>4</sup>Disturbance: CN=Construction, AC=Aircraft, HA=Human Activity, IS=Intra- or Inter-Specific, OA=Other Animal, SD=Swimmer/Diver, WC=Watercraft, if not listed Fill-in or Add to Notes; <sup>5</sup>Environmental Variables: BSS: see attached, Sky Cover: C=Clear, CD=Cloudy, PC=Partly Cloudy, O=Overcast, F=Fog, HZ=Hazy, LR=Light Rain, HR=Heavy Rain, Vis: Bad=Visibility < 0.5 km, Poor=Visibility 0.5-1.5 km, Moderate=Visibility 1.5-10 km, Good=Visibility 10-20 km, Excellent=Visibility > 20 km)





*Acoustic and Marine Mammal Monitoring Plan for the City of San Diego's  
Coast Boulevard Walkway Improvements Project*

**Project:** \_\_\_\_\_

## Environmental & Acoustic Datasheet

[illegible]

Abbreviations: Obs=Observed, Max=maximum, dB=decibel(s), rms=root mean square, Dist=distance, Const=construction, BSS=Beaufort Sea State, Temp=temperature, Dir=direction, Vis=visibility, ZOI=Zone of Influence

<sup>1</sup>Type of Survey: Pre-Activity (Pre), Construction Activity (Con), Post-Activity (Post),

<sup>2</sup>Location: N1, N2, F1, F2, F3, 90 dB ZOI, or 100 dB ZOI;

<sup>3</sup>Visibility: bad (<0.5 km), poor (0.5-1.5 km), moderate (1.5-10 km), good (10-20 km), excellent (>20 km).

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Beaufort Sea State Scale:

Beaufort Scale	Sea Condition	Wave Height		Wind Speed
		M	Ft	MPH
0	Flat, glassy water, calm	0	0	<1
1	Light ripple, no crests, light air	0 - 0.2	0 - 1	1 - 3
2	Small wavelets, crests glassy appearance but not breaking, light breeze	0.2 - 0.5	1 - 2	3 - 7
3	Large wavelets, scattered whitecaps, gentle breeze	0.5 - 1	2 - 3.5	8 - 12
4	Small waves, frequent whitecaps, moderate breeze	1 - 2	3.5 - 6	13 - 17
5	Moderate waves, many whitecaps, fresh breeze	2 - 3	6 - 9	18 - 24
6	All whitecaps, some spray and white foam crests, strong breeze	3 - 4	9 - 13	25 - 30
7	Breaking waves, some foam, waves blown into steaks, high wind/moderate gale	4 - 5.5	13 - 19	31 - 38
8	Medium high waves, foamy streaks, considerable airborne spray, gale	5.5 - 7.5	18 - 25	39 - 46
9	High waves, dense foamy streaks, large amount of airborne spray, strong gale	7 - 10	23 - 32	47 - 54
10 - 12	Storm, violent storm, Hurricane wind force	9 - >14	29 - >45	55 - 63