AES HUNTINGTON BEACH L.L.C. GENERATING STATION

Marine Mammal Protection Act
Small Take Permit Application

JANUARY 2001

Prepared for:

AES HUNTINGTON BEACH L.L.C.
GENERATING STATION

Prepared by:

MBC *APPLIED ENVIRONMENTAL SCIENCES*
COSTA MESA, CALIFORNIA

Marine Mammal Protection Act
Application for Small Take Permit
AES Huntington Beach L.L.C. generating station
Huntington Beach, California

28 February 2001

James Lecky
Asst. Regional Administrator for Protected Resources
National Marine Fisheries Service
501 W. Ocean Blvd, Ste. 4200
Long Beach, CA 90802-4213

Re: Request for Small Take Permit - AES Huntington Beach L.L.C. generating station
Small Take Exemption Permit Application

Dear Mr. Lecky:

AES Huntington Beach L.L.C., owner of the AES Huntington Beach L.L.C. generating station, hereby submits the enclosed application, pursuant to Section 101(a)(5)(A) of the Marine Mammal Protection Act. The application requests a small take exemption permit for the incidental lethal taking of small numbers of pinnipeds (harbor seals, California sea lions, and northern elephant seals) as a result of plant operations.

AES Huntington Beach L.L.C. generating station generates 1,020 megawatts of electrical power for the people of southern California. Formerly known as the Huntington Beach Generating Station, Southern California Edison (SCE) sold the plant to AES Corporation, and transfer of ownership was completed in May 1998. As described in the application, the plant draws ocean water through an offshore intake structure to provide cooling for the plant's condensers and other necessary components. The intake structure is located approximately 1,500 ft offshore the plant in 28 feet of water. The cooling water is pumped back to the ocean through an offshore discharge structure. Small numbers of Pacific harbor seals and California sea lions have been found in the station's intake forebay as an apparent result of their entering the intake structure and then being drawn through the intake tunnel.

The intake and discharge structures associated with the cooling water system of the AES Huntington Beach L.L.C. generating station were specifically designed and located to minimize their environmental effects, particularly with respect to thermal discharge and fish entrapment. Since 1977, SCE and AES Huntington Beach L.L.C. have observed and reported the entrainment of pinnipeds at the plant to the National Marine Fisheries Service (NMFS), Southwest Region.

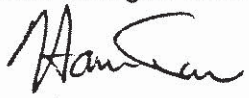
A total of 13 pinnipeds have been entrained at the plant since 1977, a rate of about one animal every two years. Incidental takes at the AES Huntington Beach L.L.C. generating station have had negligible effects on pinniped stocks and the ability of the pinniped populations to reach and maintain their optimum sustainable levels, and are only a very small fraction of the total number of reported non-natural mortalities that occur annually. Nonetheless, AES Huntington Beach L.L.C., in consultation with the NMFS Southwest Region, has concluded that it is advisable to submit this application for an exemption from the Marine Mammal Protection Act of February, 1995, for small takes.

In parallel with the submittal of the exemption permit application, AES Huntington Beach L.L.C. continues to evaluate effective, implementable means to minimize pinniped entrainment. Marine mammal exclusion bars, currently installed on the intake structure, act as visual cues to deter animals from entering the intake structure. Marine mammal rescue cages, in use since the mid-1970s, allow the safe release of live animals from inside the plant.

AES Huntington Beach L.L.C. respectfully requests that NMFS issue the exemption for the maximum period allowed by law. If you have any questions on this matter, please do not hesitate to contact me at (714) 374-1408.

Sincerely,

AES Huntington Beach L.L.C. generating station



Han Tan
Engineer

AES HUNTINGTON BEACH L.L.C. GENERATING STATION

Marine Mammal Protection Act
Small Take Permit Application

27 February 2001

Prepared for:
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TABLE OF CONTENTS

APPLICATION 1

1. A DETAILED DESCRIPTION OF THE SPECIFIC ACTIVITY OR CLASS OF ACTIVITIES THAT CAN BE EXPECTED TO RESULT IN INCIDENTAL TAKINGS OF MARINE MAMMALS 1
   Design and history of AES Huntington Beach L.L.C. generating station's cooling water system 1
   Incidental takings by the cooling system intake 4

2. THE DATE(S) AND DURATION OF SUCH ACTIVITY AND THE SPECIFIC GEOGRAPHICAL REGION WHERE IT WILL OCCUR 4

3. THE SPECIES AND NUMBERS OF MARINE MAMMALS LIKELY TO BE FOUND WITHIN THE ACTIVITY AREA 6
   California sea lion 6
   Harbor seal 6
   Northern elephant seal 6

4. A DESCRIPTION OF THE STATUS, DISTRIBUTION, AND SEASONAL DISTRIBUTION (WHEN APPLICABLE) OF THE AFFECTED SPECIES OR STOCKS OF MARINE MAMMALS LIKELY TO BE AFFECTED BY SUCH ACTIVITIES 7
   California sea lion 7
   Harbor seal 7
   Northern elephant seal 8

5. 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 8

6. 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 PARAGRAPH (A)(5)(SECTION 5) OF THIS SECTION, AND THE NUMBER OF TIMES SUCH TAKINGS BY EACH TYPE ARE LIKELY TO OCCUR 8
   California sea lion 8
   Harbor seal 9
   Northern elephant seal 9

7. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE SPECIES OR STOCK OF MARINE MAMMAL 9

8. THE ANTICIPATED IMPACT OF THE ACTIVITY ON THE AVAILABILITY OF THE SPECIES OR STOCKS OF MARINE MAMMALS FOR SUBSISTENCE USES 10

9. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE HABITAT OF THE MARINE MAMMAL POPULATIONS, AND THE LIKELIHOOD OF RESTORATION OF THE AFFECTED HABITAT 10

10. THE ANTICIPATED IMPACT OF THE LOSS OR MODIFICATION OF THE HABITAT OF THE MARINE MAMMAL POPULATIONS INVOLVED 11

11. THE AVAILABILITY AND FEASIBILITY (ECONOMIC AND TECHNOLOGICAL) OF EQUIPMENT, METHODS, AND MANNER OF CONDUCTING SUCH ACTIVITY OR OTHER MEANS OF EFFECTING THE LEAST PRACTICAL ADVERSE IMPACT UPON THE AFFECTED SPECIES OR STOCKS, THEIR HABITAT, AND ON THEIR AVAILABILITY FOR SUBSISTENCE USES, PAYING PARTICULAR ATTENTION TO ROOKERIES, MATING GROUND, AND OTHER AREAS OF SIMILAR SIGNIFICANCE 11

12. WHERE THE PROPOSED ACTIVITY WOULD TAKE PLACE IN OR NEAR A TRADITIONAL ARCTIC SUBSISTENCE HUNTING AREA AND/OR AFFECT THE AVAILABILITY OF A SPECIES OR STOCK OF MAMMAL FOR ARCTIC SUBSISTENCE USES, THE APPLICANT MUST SUBMIT EITHER A PLAN OF COOPERATION 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 12

13. 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 THE 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 12

14. SUGGESTED MEANS OF LEARNING OF, ENCOURAGING, AND COORDINATING RESEARCH OPPORTUNITIES, PLANS, AND ACTIVITIES RELATING TO REDUCING SUCH INCIDENTAL TAKING AND EVALUATING ITS EFFECTS 13

LITERATURE CITED 13

ATTACHMENT
Marine Mammal Stranding Report.

LIST OF FIGURES

Figure 1. Location of AES Huntington Beach L.L.C. generating station 2
Figure 2. Layout of velocity cap (top) and profile at the offshore intake structure (bottom). AES Huntington Beach L.L.C. generating station 3

LIST OF TABLES

Table 1. Number and condition of pinnipeds entrained at the AES Huntington Beach L.L.C. generating station, 1977 to 2000 5
Table 2. History of marine mammal takes at AES Huntington Beach L.L.C. generating station, 1977 to 2000 5

MARINE MAMMAL PROTECTION ACT
SMALL TAKE EXEMPTION PERMIT

APPLICATION

1. A DETAILED DESCRIPTION OF THE SPECIFIC ACTIVITY OR CLASS OF ACTIVITIES THAT CAN BE EXPECTED TO RESULT IN INCIDENTAL TAKINGS OF MARINE MAMMALS.

Incidental live and lethal takings of seals and sea lions have occurred and are expected to continue as a result of the operation of the AES Huntington Beach L.L.C. generating station circulating water system (CWS). Formerly called the Huntington Beach Generating station, AES Huntington Beach L.L.C. generating station is a subsidiary of AES Corporation, and is operated by Southern California Edison Company (SCE) personnel. Transfer of ownership of the generating station from SCE to AES was completed as of 16 May 1998. AES Huntington Beach L.L.C. generating station, located on the southern California coast in the city of Huntington Beach, consists of four fossil-fueled steam-electric generating units and one multiple jet turbine peaker unit with a total capacity of 1,020 megawatts (Mw) (Figure 1). Units 1, 2, and 3 are each rated at 215 Mw, Unit 4 is rated at 225 Mw, and the peaker unit (Unit 5) is rated at 150 Mw. Units 3 and 4 are not currently operable (CRWQCB 2000).

The live and lethal takes occur when pinnipeds enter the submerged cooling water intake structure, located approximately 457 m (1,500 ft) offshore Huntington Beach, California, in 8.4 m (28 ft) of water. Some proportion of those pinnipeds entering the intake structure become entrained in the CWS as the cooling water is drawn through the intake conduit to the plant. Continuous cooling water flow is necessary for generation of electricity and for the safety of the plant.

Design and history of AES Huntington Beach L.L.C. generating station's cooling water system.

Ocean water for cooling purposes is supplied to the AES Huntington Beach L.L.C. generating station via a single cooling water system. The flow is directed to a screening facility within the plant. Eight circulating water pumps, each rated at 44,000 gallons per minute (gpm), serve the generating station for a maximum design flow of 352,000 gpm (approximately 507 million gallons per day [mgd]). Units 1-4 have closed cooling-water systems to cool auxiliary equipment in each plant. The closed system uses demineralized water which is cooled in turn by part of the main cooling water stream, which is diverted to a heat exchanger and subsequently returns to the main cooling water flow. Units 1-4 each divert 9,750 gpm (for a total of 39,000 gpm or 56.2 mgd).

The single intake that supplies cooling water to all units is located 457 m (1,500 ft) offshore Huntington Beach, California, at a bottom depth of 8.4 m (28 ft). The intake structure consists of a 4.3-m (14-ft) inside diameter (ID) inlet conduit and a 10.1-m by 8.5-m (33-ft by 28-ft) velocity cap, suspended 1.2 m (4 ft) above a 6.4-m (21.0-ft) ID vertical riser (Figure 2). The elevation of the intake riser lip is -3.7 m (-12 ft) Mean Lower Low Water (MLLW). This configuration allows the relatively large flow of seawater to be drawn into the conduit at a relatively low velocity. Average velocity at the intake is 0.6 meters per second (m/s).

Cooling water is conveyed from the intake structure through an underground horizontal conduit 4.3-m (14-ft) in diameter to a 4.0-m by 15.2-m (13-ft by 50-ft) open-air forebay within the plant. The depth of the forebay is approximately -5.2 m (-17 ft) MLLW. The cooling water is then directed from the forebay through trash bars and vertical traveling screens which prevent debris, fish, and invertebrates from entering the CWS. The trash racks consist of two sections of vertical steel bars 6.1 m (20 ft) wide and 5.5 m (18 ft) deep with 3" openings. Beyond the trash racks, the intake channel expands into four 3.4-m (11-ft) wide channels, each of which contains a traveling

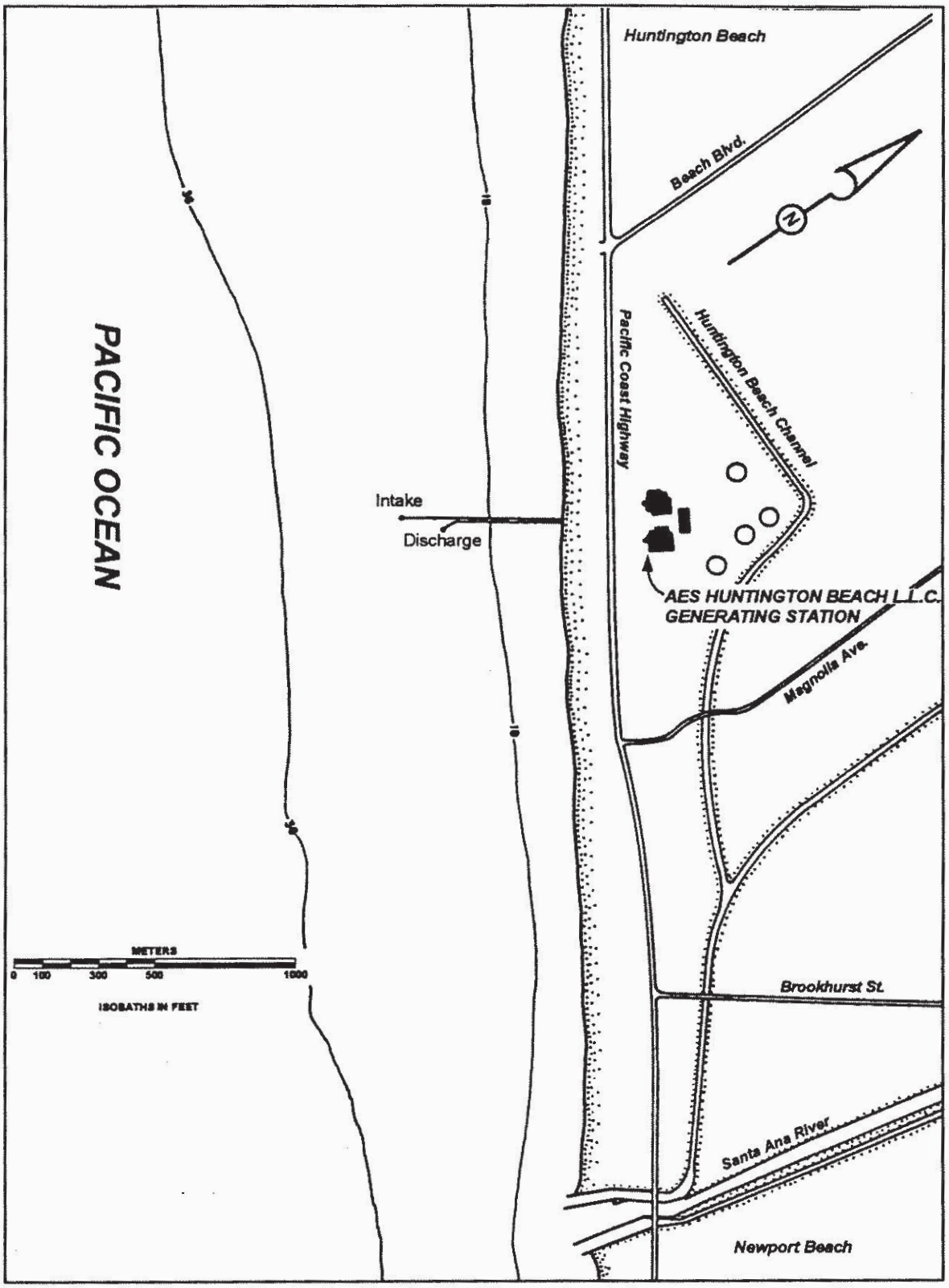

Figure 1. Location of AES Huntington Beach L.L.C. generating station.

screen with ½" mesh for removal of small debris, fish, and macroinvertebrates. Design velocity through the screens is 0.84 m/s. Debris, fish, and invertebrates are removed from the screens by high-pressure sprays and conveyed to trash baskets for disposal.

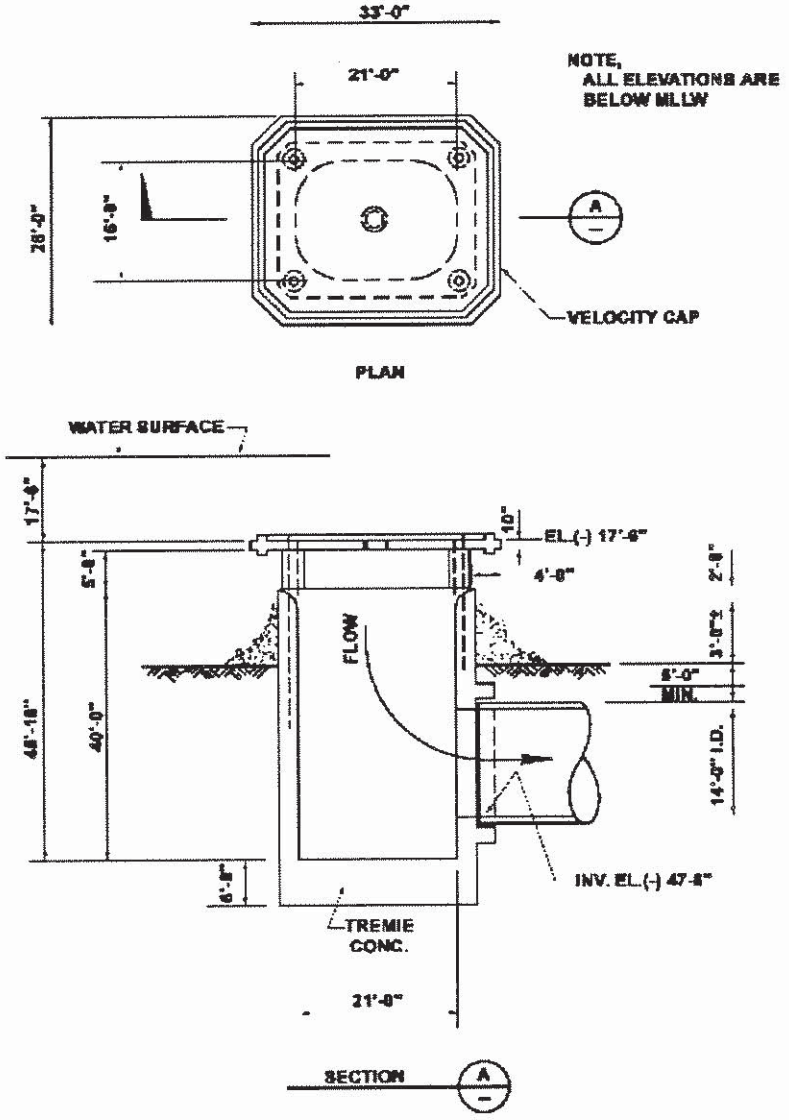

Figure 2. Layout of velocity cap (top) and profile at the offshore intake structure (bottom). AES Huntington Beach L.L.C. generating station.

The cooling water is then pumped to the four main condensers through eight 1.4-m (4.3-ft) ID pipes. Flows are then joined to return to the discharge chamber of the screenwell, and subsequently discharged through a single 4.3-m (14-ft) ID discharge conduit. Warmed cooling water is discharged offshore Huntington Beach through a single discharge structure, resembling the intake but without the velocity cap, terminating approximately 91 m (300 ft) inshore of the intake structure. The discharge structure is located in approximately 6.5 m (21.3 ft) of water.

Products of other plant systems join the cooling water stream prior to discharge. Condenser biofouling is controlled by treating the cooling water with chlorine before it passes through the condenser tubes. Chlorine concentrations in the discharged water are controlled at a level to be in compliance with existing National Pollutant Discharge Elimination System (NPDES) permit limitations. Other low-volume inplant waste streams which are generated periodically, such as brine wastes, boiler condensate overboard, yard drains, in-plant drains, floor drains, and laboratory and sampling streams are discharged to a retention basin prior to ocean discharge. Wastewater from chemical cleaning of boiler tubes, fireside and air preheater washes, cleaning compounds, rinse waters, and other cleaning-derived residues, are stored temporarily in tanks prior to treatment by a special mobile lime treatment system. After treatment, these wastes are combined with the discharge. These wastes are generated infrequently (CRWQCB 2000).

Incidental takings by the cooling system intake.

Because of the underwater, offshore location of the intake structure, pinnipeds have not been directly observed entering the velocity cap. Since horizontal intake velocities are relatively low (0.6 m/s or less), it is reasonable to assume the following sequence of events leads to the entrainment of a live mammal in the CWS (it is possible that pinniped carcasses are entrained in the CWS). The mammal swims into the intake velocity cap in search of or in pursuit of prey, or out of natural curiosity. Once inside the velocity cap, the flow rate increases as the mammal approaches the center vertical riser that connects to the intake conduit. Increasing current velocity and transition from horizontal flow through the velocity cap to vertical flow downward through the riser shaft causes the mammal to be drawn into the riser. Vertical currents are not normally encountered in the pinniped's environment. This, combined with a sudden lack of light and confinement in the CWS, disorients the animal and prevents an effective escape response, especially for young, immature pinnipeds. As a result, the pinniped is unable to exit, and 1) drowns or is fatally injured in transit from the intake structure to the forebay, 2) survives transit to the forebay and succumbs in the forebay due to exhaustion, illness, or disease, or 3) survives transit to the forebay and is removed by a specialized cage designed for rescuing live pinnipeds. Healthy pinnipeds are subsequently released to the ocean. Visibly ill or injured seals are transported to specialized facilities for further observation and/or treatment prior to being released.

2. THE DATE(S) AND DURATION OF SUCH ACTIVITY AND THE SPECIFIC GEOGRAPHICAL REGION WHERE IT WILL OCCUR.

The location of the AES Huntington Beach L.L.C. generating station intake structure, where the takes occur, is illustrated in Figure 1. The intake structure is located approximately 457 m (1,500 ft) from shore off Huntington Beach, California.

Pinniped (seal and sea lion) takes at AES Huntington Beach L.L.C. generating station were first reported in May 1977 (Table 1). Of the 13 recorded pinniped entrainments between May 1977 and September 1998, five were reported during fall months (2 in September and 3 in October), and three entrainments occurred in March (Table 2). Three of the 13 takes were reported in 1979, and two occurred in 1977, 1980, and 1983.

Nine individual California sea lions and four harbor seals have been entrained in the last 24 years. Of the nine California sea lions, seven were found dead and two were found alive and released. Of the four entrained harbor seals, two were found dead and two were found alive and subsequently released. In total, 69% of pinniped entrainments in the cooling water system involved a carcass, while 31% involve live animals.

Based on this history of seal and sea lion takes in the Huntington area, it is reasonable to assume that seal/sea lion takes will continue throughout the plant's operating life. The frequency of takes has declined since 1983, and beginning in 1984, the plant began operating at a lower capacity.

Table 1. Number and condition of pinnipeds entrained at the AES Huntington Beach L.L.C. generating station, 1977 to 2000.

	Harbor seals		California sea lions	
Year	Released unharmed	Found dead	Released unharmed	Found dead
1977	1	-	-	1
1978	-	-	-	-
1979	1	1	-	1
1980	-	1	-	1
1981	-	-	-	1
1982	-	-	-	1
1983	-	-	-	2
1984	-	-	-	-
1985	-	-	-	-
1986	-	-	-	-
1987	-	-	-	-
1988	-	-	-	-
1989	-	-	1	-
1990	-	-	-	-
1991	-	-	-	-
1992	-	-	-	-
1993	-	-	-	-
1994	-	-	-	-
1995	-	-	-	-
1996	-	-	-	-
1997	-	-	-	-
1998	-	-	1	-
1999	-	-	-	-
2000	-	-	-	-
Total	**2**	**2**	**2**	**7**

Only two pinnipeds (both California sea lions) have been entrained since 1983. As pinniped populations continue to increase, however, the entrainment rate at the generating station may increase.

Table 2. History of marine mammal takes at AES Huntington Beach L.L.C. generating station, 1977 to 2000.

Date Entrained	Date Removed	Species	Comments
5/5/1977	5/5/1977	Harbor seal	Released unharmed.
10/26/1977	10/26/1977	California sea lion	Dead in forebay.
3/4/1979	3/4/1979	California sea lion	Dead in forebay. Removed prior to heat treatment.
5/5/1979	5/5/1979	Harbor seal	Released unharmed.
11/20/1979	11/20/1979	Harbor seal	Found dead, no external injuries. Approximately 200 lb.
6/8/1980	6/8/1980	California sea lion	Adult, dead when found.
8/3/1980	8/4/1980	Harbor seal	Adult, dead when found.
10/28/1981	10/28/1981	California sea lion	Entrained dead. Sent to landfill.
11/22/1982	11/22/1982	California sea lion	Removed dead.
5/24/1983	5/24/1983	California sea lion	Dead and decomposed; 175 lb.; Tag #836, sent to La Jolla.
9/27/1983	9/30/1983	California sea lion	Dead, sent to landfill. 5.5 ft.
10/20/1989	10/21/1989	California sea lion	Released at Balboa Pier.
9/20/1998	9/21/1998	California sea lion	Released unharmed; 250 lb.; 5.5 ft; Climbed out of forebay.

3. THE SPECIES AND NUMBERS OF MARINE MAMMALS LIKELY TO BE FOUND WITHIN THE ACTIVITY AREA.

The marine mammal species most likely to be affected by the operation of the AES Huntington Beach L.L.C. generating station are the California sea lion (*Zalophus californianus*), Pacific harbor seal (*Phoca vitulina*), and northern elephant seal (*Mirounga angustirostris*). Populations of these three species off the southern California coast have continued to increase since the passage of the Marine Mammal Protection Act (MMPA) in 1972. Exceptions include decreases in productivity during El Niño years (e.g. 1983, 1992, and 1998).

California sea lions and harbor seals are usually observed by biologists offshore of the AES Huntington Beach L.L.C. generating station during annual NPDES monitoring surveys (MBC 1978-1982, 1983a, 1984-1999). Northern elephant seals have never been entrained at the generating station, but are known to occur in the study area.

Year 2000 population estimates derived for the three pinniped species likely to occur in the study area are from Forney et al. (2000).

California sea lion

A California sea lion (U.S. stock) population estimate was determined during July 1999. Estimates were determined by counting all pups during the breeding season (because this is the only age class that is ashore in its entirety), and the number of births is estimated from the pup count. Population size is estimated from the number of births and the proportion of pups in the population. The pup count in 1999 (42,388 individuals) was adjusted for an estimated 15% pre-census mortality resulting in an estimated 48,746 live births in the population. The percentage of newborn pups in the population (22.8 to 23.9%) was estimated from a life table derived for the northern fur seal (*Callorhinus ursinus*), which was modified to account for the growth rate of this California sea lion population (5.0 to 6.2% per year). Multiplying the number of pups born by the inverse of these fractions (4.39 to 4.19) results in population estimates ranging from 204,000 to 214,000, respectively (Forney et al. 2000). The population has been growing recently, though fishery mortality is increasing.

Harbor seal

A harbor seal (California stock) population estimate was determined during 1995. A population estimate was attempted in 1999, but was unsuccessful due to inclement weather and camera failure. Population size was estimated by counting the number of seals ashore during the peak haul-out period (the May/June molt) and by multiplying this count by the inverse of the estimated fraction of seals on land. Based on the most recent harbor seal counts (23,302 individuals in May/June 1995), the harbor seal population in California in 1995 was estimated at 30,293. The population appears to be growing and fishery mortality is declining.

Northern elephant seal

A complete population count of northen elephant seals is not possible because all age classes are not ashore at the same time. Northern elephant seal population (California breeding stock) was estimated in 1996. Population size was estimated by counting the number of pups produced that year and multiplying by the inverse of the expected ratio of pups to total animals. In 1996, the estimated California stock of northern elephant seal was approximately 84,000 individuals.

4. A DESCRIPTION OF THE STATUS, DISTRIBUTION, AND SEASONAL DISTRIBUTION (WHEN APPLICABLE) OF THE AFFECTED SPECIES OR STOCKS OF MARINE MAMMALS LIKELY TO BE AFFECTED BY SUCH ACTIVITIES.

All species of pinnipeds likely to be affected by the operation of the AES Huntington Beach L.L.C. generating station are protected under the MMPA. None of the pinnipeds are currently listed (state or federal) as threatened or endangered under the Endangered Species Act (CDFG 2000). None of the pinnipeds are listed as depleted under the MMPA, and no populations of these animals are considered a strategic stock under the MMPA. A stock is listed as "strategic" when estimated incidental fisheries mortality exceeds the potential biological removal (PBR). The PBR value is the maximum number of marine mammals, not including natural mortalities, that may be removed from a marine mammal stock while still allowing the stock to maintain or reach its optimum sustainable population.

California sea lion

The California sea lion (*Zalophus californianus*) is composed of three subspecies: *Z. c. wollebaeki* (on the Galapagos Islands), *Z. c. japonicus* (in Japan, but now thought to be extinct), and *Z. c. californianus* (from southern Mexico to southwestern Canada). Following discussions of California sea lion will refer to *Z. c. californianus*.

The subspecies *Z. c. californianus* is divided furthermore into three stocks depending on location of the breeding areas (Forney et al. 2000). The United States stock begins at the U.S./Mexico border and extends northward into Canada. The Western Baja California stock ranges from the U.S./Mexico border southward to the southern tip of the Baja California Peninsula. The third stock, the Gulf of California stock, inhabits the Gulf of California and extends southward and across to the mainland of southern Mexico. Though U.S. rookeries are distant from the major rookeries of western Baja California, males from the Western Baja California rookeries may be found in U.S. waters.

In southern California, known rookeries are located at San Miguel, San Nicholas, Santa Barbara, and San Clemente islands (Reeves et al. 1992). Smaller numbers of California sea lions haul out seasonally at Santa Rosa, Anacapa, and Santa Catalina islands. Adult male California sea lions leave rookeries in August and September and migrate north during autumn and winter, returning to rookeries in spring (Reeves et al. 1992). Males from Baja California arrive at the Channel Islands in December and January. Males from southern California travel as far north as British Columbia, California. Seasonal movements of females are unknown.

Harbor seal

Two harbor seal (*Phoca vitulina*) subspecies exist in the Pacific: *P. v. stejnegeri* in the western North Pacific, and *P. v. richardsi* in the eastern North Pacific. *P. v. richardsi* ranges from Baja California, Mexico to the Pribilof Islands in Alaska. Three stocks of this subspecies are recognized: the California stock, the Oregon/Washington outer coastal stock, and a stock utilizing inland waters of Washington. In California, there are 400 to 500 harbor seal haulouts on the mainland and on offshore islands.

In the eastern Pacific, harbor seals breed from San Quintin, Baja California, to Nome, Alaska. Pupping is progressively earlier from Washington and Oregon southward to Baja California, where it takes place in February and March. Harbor seals display fidelity to haul-out grounds from year to year, but they are capable of long-distance movements. Some short movements are likely associated with seasonal availability of prey and breeding. However, in some areas, harbor seals are present throughout the year.

Northern elephant seal

Northern elephant seals (*Mirounga angustirostris*) breed and give birth in California (California breeding stock) and in Baja California (Mexican breeding stock), primarily on offshore islands between December and March. Further discussion focuses on the California breeding stock.

In southern California, northern elephant seal colonies are established on Santa Barbara, San Nicholas, San Miguel, and Santa Rosa islands. A few elephant seals give birth on San Clemente Island. Males feed near the Aleutian Islands and in the Gulf of Alaska, while females feed further south (below 45°N). Adult elephant seals return to land to molt between March and August, with males usually returning later than females. While movement among rookeries occurs, most elephant seals return to their natal rookeries when they begin to breed. Weaned pups leave San Nicholas and San Miguel islands in late winter and spring. Most pups move northward, while a few remain near their birth sites or move south during their first year.

5. 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.

The type of incidental taking being requested in this application are incidental takings by harassment, injury, and or/death caused by entrapment of seals in the AES Huntington Beach L.L.C. generating station circulating water system intake as described in Section 1.

Harassment occurs when pinnipeds enter the intake tunnel (as described in Section 1), and are recovered by plant personnel by use of marine mammal rescue cages. Animals in the cages are subsequently released unharmed to the ocean. Though no pinnipeds entrained in the generating station have been observed with external injuries, they can potentially be injured prior to entrainment, or injured once inside the cooling water system. About 70% of the 13 pinnipeds entrained at the AES Huntington Beach L.L.C. generating station were found dead. Cause of death of these nine animals was not discerned.

6. 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 PARAGRAPH (A) (5) (SECTION 5) OF THIS SECTION, AND THE NUMBER OF TIMES SUCH TAKINGS BY EACH TYPE OF TAKING ARE LIKELY TO OCCUR.

Incidental live and lethal takings of seals and sea lions are anticipated to occur as a result of the continued operation of the AES Huntington Beach L.L.C. generating station circulating water system. The anticipated number of takes of California sea lions and harbor seals may increase as a result of the continued population increase in southern California waters. Northern elephant seals have not been taken by the generating station.

California sea lion

A recorded total of nine California sea lions has been entrained by the generating station since 1977, an average of less than one (0.4) California sea lions per year. Take rates have ranged from zero per year to two per year in 1983. Of the three specimens with estimated weights and/or lengths, all were likely adults.

Harbor seal

A recorded total of four harbor seals has been entrained by the AES Huntington Beach L.L.C. generating station CWS since 1977. This represents an average of less than one (0.2) harbor seals per year. Take rates have ranged from zero per year to two per year (1979). The two dead harbor seals entrained in 1979 and 1980 were both adults.

Northern elephant seal

No known entrainments of northern elephant seals have occurred at the AES Huntington Beach L.L.C. generating station to date. Continued population increases of this species in southern California waters could increase the likelihood of elephant seal entrainments in the cooling water system of the generating station in the future.

7. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE SPECIES OR STOCK OF MARINE MAMMAL.

Pinniped species taken at the AES Huntington Beach L.L.C. generating station include California sea lion and harbor seal. Northern elephant seal could potentially become entrained in the cooling water system, but to date, has not been entrained. The continued operation of the AES Huntington Beach L.L.C. generating station is likely to have a negligible effect on the population or stocks of these species.

The Marine Mammal Protection Act (as amended in 1994) requires the National Marine Fisheries Service (NMFS) to produce stock assessment reports for all marine mammal stocks in waters within the U.S. Exclusive Economic Zone. NMFS is also required to estimate the potential biological removal (PBR) for each stock of each species. The PBR value is the maximum number of marine mammals, not including natural mortalities, that may be removed from a marine mammal stock while still allowing the stock to maintain or reach its optimum sustainable population. When the number of mammals removed from the stock exceeds the PBR, the stock is listed as "strategic", and additional conservation strategies are employed. PBR estimates were recently reported by NMFS (Forney et al. 2000).

The PBR for California sea lion (U.S. stock) is 6,591 sea lions per year. Total annual take from sources other than the AES Huntington Beach L.L.C. generating station include 1,131 fishery-related mortalities and 141 other human-related deaths, a total of 1,272 takes. Maximum annual mortality at the AES Huntington Beach L.L.C. generating station was two individuals in 1983. This represents less than 0.2% of the total takes and 0.03% of the current PBR. Continued takes of this species from this source will not significantly affect the status of the U.S. stock of California sea lions.

The PBR for harbor seal (California stock) is 1,678 harbor seals per year. Fishery-related mortalities were not estimated in recent years due to insufficient data. Available data on human-related takes (non-fishery) from 1995 to 1998 includes 41 harbor seal takes, 39 of them lethal. Maximum annual mortality at the AES Huntington Beach Generating Station was two individuals in 1979. This represents 0.1% of the PBR. Continued takes of this species from this source is not significantly affecting the status of the stock of harbor seal.

The PBR for northern elephant seal (California breeding stock) is 2,142 animals per year. Although no recorded takes of this species have occurred at the AES Huntington Beach L.L.C. generating station, continued population increases of this species in southern California waters could increase the likelihood of elephant seal entrainments in the cooling water system of the generating station in the future. Estimated annual fishery-related takes are estimated between 33 and 100 individuals per year (1.5% to 4.7% of the PBR, respectively), while there were 9 non-fishery-related

takes (8 lethal) from 1995 through 1998. Therefore, any incidental take from the generating station, combined with these incidental takes, would be considered insignificant.

8. THE ANTICIPATED IMPACT OF THE ACTIVITY ON THE AVAILABILITY OF THE SPECIES OR STOCKS OF MARINE MAMMALS FOR SUBSISTENCE USES.

The activity will not have an impact on the availability of marine mammals for subsistence uses, as there is no take of marine mammals for subsistence purposes in California.

9. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE HABITAT OF THE MARINE MAMMAL POPULATIONS, AND THE LIKELIHOOD OF RESTORATION OF THE AFFECTED HABITAT.

The continued operation of the AES Huntington Beach L.L.C. generating station and its cooling water system has had, and is anticipated to have, a negligible impact on the habitat of seals and sea lions. The cooling water system of the generating station has operated under the authorization of, and in accordance with provisions of, the National Pollutant Discharge Elimination System (NPDES) permit issued by the Environmental Protection Agency (EPA).

Other than the continued operation of the cooling water system, there are no AES Huntington Beach L.L.C. generating station activities planned for the offshore area. Therefore, potential seal/sea lion habitat effects are limited to those associated with the physical presence of the intake and discharge structures and the effects of the operation of the cooling water system. These are considered in further discussion.

Continuing studies conducted since 1978 indicate the generating station is not appreciably impacting the fish and macroinvertebrate populations offshore Huntington Beach, as populations therein remain healthy, abundant, and diverse (MBC 1978-1982, 1983a, 1984-1999). The intake and discharge structures do provide habitat for numerous fouling and macroinvertebrate species and fish species, including important prey items of seals and sea lions.

When the plant is on-line, warmed effluent from the AES Huntington Beach L.L.C. generating station is usually detected in the vicinity of the discharge during sampling (MBC 1990-1999). However, warm waters rarely extend to other water quality stations further than 200 feet from the discharge. The discharge of warm water has not modified the habitat of seals or sea lions, other than the potential trophic opportunity provided by the structure as discussed previously.

The operation of the AES Huntington Beach L.L.C. generating station requires the presence of an intake structure for the conveyance of ocean water for cooling purposes. The intake structure is located offshore from the generating station in approximately 8 m of water, and rises approximately 5 m into the water column. This structure provides an entry point for seals/sea lions to the cooling water system of the generating station. The live pinnipeds that become entrained are not able to swim back out either due to disorientation, increased flow velocity in the riser shaft, the confinement of the structure, the lack of ambient light in the intake, or a combination of these factors.

In summary, the only discernible effect the intake structure has had on pinniped habitat is the incidental takes of California sea lions and harbor seals. With respect to restoration, the intake and discharge structures will be capped, removed, or appropriately disposed of as part of the decommissioning of the generating station so that fish, pinnipeds, and recreational divers cannot enter the CWS.

10. THE ANTICIPATED IMPACT OF THE LOSS OR MODIFICATION OF THE HABITAT ON THE MARINE MAMMAL POPULATIONS INVOLVED.

The continued operation of the AES Huntington Beach L.L.C. generating station and its cooling water system has had, and is anticipated to have, an insignificant impact on the habitat of seals and sea lions.

There have been no demonstrated significant changes in the physicochemical conditions in the vicinity of the discharge structure (MBC 1978-1982, 1983a, 1984-1999). It is unlikely there have been any changes in the availability of prey items of pinnipeds or that seal/sea lion behavior has been modified due to operation of the plant. Growth of fouling organisms on the intake structures is controlled, as the intakes are cleaned periodically by qualified divers in accordance with generating station procedures.

As discussed previously, the continued presence of the intake structure does not noticeably modify the habitat of pinnipeds. The intake and discharge structures provide habitat for fish and macroinvertebrates that might not normally be found near these areas, and these animals are important prey items for seals and sea lions. The intake structure serves as a point of entry to the CWS where pinniped mortality has occurred. Pinnipeds, at least adults, do not appear to be involuntarily swept into the intakes. Intake velocities of less than 0.6 m/s (2.0 ft/s) at the velocity cap are less than the 8 to 16 ft/s measured swimming speed of adult pinnipeds.

11. 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 ON THEIR AVAILABILITY FOR SUBSISTENCE USES, PAYING PARTICULAR ATTENTION TO ROOKERIES, MATING GROUNDS, AND OTHER AREAS OF SIMILAR SIGNIFICANCE.

Options to prevent entrainment of marine life (primarily fish) have been explored in the past, and research of available technologies continues. Complete exclusion of pinnipeds from the cooling water system of the AES Huntington Beach L.L.C. generating station would require either physical barriers or some other method(s) to discourage their presence in the vicinity of the intake structures. With no significant projected impacts from the generating station to pinniped populations, or to sensitive habitat, the primary purpose of any proposed actions will be the prevention of seal/sea lion takes, including live and lethal takes, by the entrapment of these animals in the intake tunnels of the AES Huntington Beach L.L.C. generating station.

In the mid-1970s, specialized cages were designed and deployed at SCE and LADWP coastal generating stations, including the AES Huntington Beach L.L.C. generating station, to facilitate the safe removal of live pinnipeds from in-plant forebay areas. The cages were redesigned in the late 1980s, and remain in operation today. When in-plant inspections reveal the presence of a pinniped in the CWS, a floating marine mammal cage is safely lowered into the forebay area. In time, the mammal begins to tire and seeks a haul-out site. Since no haul-out structures besides the cage exist in the forebay, the mammal eventually enters the cage, and its weight deploys a treadle that closes a gate, preventing the mammal from exiting. At this time, the cage is lifted out of the forebay by crane, and observations and data are recorded on available data sheets concerning the pinniped. An example of the data sheet is presented in Attachment A. Examples of data recorded include date and time of capture, species of mammal, length and weight, sex, visible abnormalities, and estimated health. Data sheets are filled out and submitted to NMFS, even in cases of deceased animals. Pinnipeds that are visibly unhealthy or injured are transferred to personnel trained in the health and rehabilitation of marine mammals at a designated facility off-site.

In early 1988, marine mammal exclusion bars were installed on the intake structure offshore the generating station, and an improved system was installed in 1990. The system consists of bars deployed across the velocity cap down to the riser bowl, and spaced at 18-in. intervals to prevent marine mammals, and debris, from entering the cooling water system of the generating station. Bars spaced at smaller intervals could potentially clog the intake structure with debris. While not designed to exclude all animals from entering the intake structure, the exclusion bars are designed to aid marine mammals in detecting the intake structure. A seal or sea lion foraging for fish that are schooling or feeding in the vicinity of the intake is likely to be alerted to the physical presence of the intake structure when they encounter the marine mammal exclusion bars.

Numerous other options, including lights, sound, and marine mammal exclusion bars, have been considered by SCE, and most were considered unfeasible (MBC 1983b). These options were considered primarily with respect to entrainment of ichthyoplankton and impingement of fish. Installation of flashing lights at the discharge was rejected due to engineering and maintenance feasibility, and the potential to attract more fish to the area. Sound barriers to scare marine mammals away from the intake area were also considered. Again, engineering feasibility in such a dynamic environment and ambivalent test results led to the rejection of this option. Originally, the intake entrance was kept open, as it was assumed there was the potential for any barrier placed across the entrance to become fouled and inhibit the inward flow of seawater. By the late 1980s, there was sufficient evidence that because there were no major kelp beds in the vicinity, it would be feasible to install marine mammal exclusion bars if placed sufficiently far apart. This engineering option has resulted in the reduction in entrainment and entrapment of marine mammals, as evidenced by the decline in mammal takes since 1988. The improved design of the marine mammal rescue devices, incorporated in the late 1980s, has enhanced rescue operations at several plants in southern California.

Earlier examples of options included modifying the intake structure to a porous dike or offshore caisson design (MBC 1983b). However, at the time, neither of these designs had been installed at coastal power plants. These options were removed from consideration due to their relatively low incremental minimization of impinged fish and the associated estimated costs.

12. WHERE THE PROPOSED ACTIVITY WOULD TAKE PLACE IN OR NEAR A TRADITIONAL ARCTIC SUBSISTENCE HUNTING AREA AND/OR AFFECT THE AVAILABILITY OF A SPECIES OR STOCK OF MAMMAL FOR ARCTIC SUBSISTENCE USES, THE APPLICANT MUST SUBMIT EITHER A PLAN OF COOPERATION 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.

The activity does not take place in or near a traditional Arctic subsistence hunting area and does not affect the availability of a species or stock of mammal for Arctic subsistence uses.

13. 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 THE 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.

Currently, daily inspections of the forebay are performed by plant operators. When a live pinniped is observed, a marine mammal cage is lowered into the forebay so the mammal can be rescued quickly. Pinniped carcasses are reported to NMFS and disposed of at an appropriate site. Live pinnipeds are inspected for external injuries. Non-injured animals are normally released at nearby beach sites, while injured or unhealthy animals are released to a qualified rescue organization.

As required by the NPDES permit of the AES Huntington Beach L.L.C. generating station, marine monitoring studies (including but not limited to annual offshore water quality surveys, fish trawls, macroinvertebrate dive surveys, sediment chemistry studies, and analysis of benthic infauna) are conducted offshore the generating station annually. During field activities associated with these programs, presence, abundance and location of marine mammals, such as seals, sea lions, whales, and dolphins, is noted. This information is made available in annual NPDES monitoring reports (MBC 1978-1981, 1982, 1983a, 1984-1999).

14. SUGGESTED MEANS OF LEARNING OF, ENCOURAGING, AND COORDINATING RESEARCH OPPORTUNITIES, PLANS, AND ACTIVITIES RELATING TO REDUCING SUCH INCIDENTAL TAKING AND EVALUATING ITS EFFECTS.

AES Huntington Beach L.L.C. continues to explore options related to the reduction of effects on marine life, including marine mammals.

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ATTACHMENT

Marine Mammal Stranding Report

MARINE MAMMAL STRANDING REPORT

SID#_____ (NMFS USE)

FIELD NO.:_____ NMFS REGISTRATION NO.: _____

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER

Name:_____ Agency: _____ Phone: _____

Address: _____

LOCATION

State: _____ County:_____

City: _____

Locality Details: _____

_____

_____

_____

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☐ No # Animals _____

Human Interaction: ☐ Yes ☐ No ☐ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: _____

Other Causes (if known): _____

_____

DATE OF INITIAL OBSERVATION:

Yr. _____ Mo. _____ Day _____

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. _____ Mo. _____ Day _____

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

TAGS APPLIED?: ☐ Yes ☐ No

TAGS PRESENT?: ☐ Yes ☐ No

	Dorsal	Left	Right
Tag No.(s):			
Color (s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☐ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____

_____

- ☐ ?. Unknown

NECROPSIED? ☐ Yes ☐ No

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☐ 2. Female
- ☐ ?. Unknown

Straight Length:_____ ☐ cm ☐ in ☐ est

*Weight _____ ☐ kg ☐ lb ☐ est

PHOTOS TAKEN? ☐ Yes ☐ No

REMARKS: _____

_____

_____

_____

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

_____

_____

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