

RELIANT ENERGY MANDALAY GENERATING STATION

Marine Mammal Protection Act Small Take Permit Application

September 2001



Prepared for:

**RELIANT ENERGY
OXNARD, CALIFORNIA**



Prepared by:

**MBC APPLIED ENVIRONMENTAL SCIENCES
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**Marine Mammal Protection Act
Application for Small Take Permit
Reliant Energy Mandalay Generating Station
Oxnard, California**

10 September 2001

James Lecky
Assistant Regional Administrator for Protected Resources
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802-4213

RE: Request for Small Take Permit - Reliant Energy Mandalay generating station
Small Take Exemption Permit Application

Reliant Energy, owner of the Reliant Energy Mandalay 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.

Reliant Energy Mandalay generating station generates 577 megawatts of electrical power for the people of southern California. Formerly known as the Mandalay Generating Station, Southern California Edison (SCE) sold the plant to Houston Industries, now known as Reliant Energy, and transfer of ownership was completed in April 1998. As described in the application, the plant draws ocean water from Channel Islands Harbor via Edison Canal to provide cooling for the plant's condensers and other necessary components. The cooling water is returned to the ocean across the beach via a rock-lined canal. Only one pinniped, a dead sea lion, has been removed from the intake canal since 1977; it was removed from Edison Canal in November 2000.

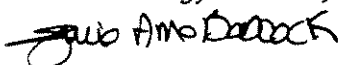
The intake and discharge structures associated with the cooling water system of the Reliant Energy Mandalay generating station were specifically designed and located to minimize their environmental effects, particularly with respect to thermal discharge and fish entrapment. As mentioned previously, one pinniped has been removed from Edison Canal since 1977. This incidental take at the Reliant Energy Mandalay generating station has had a negligible effect on pinniped stocks and the ability of the pinniped populations to reach and maintain their optimum sustainable levels. Nonetheless, Reliant Energy, 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, Reliant Energy continues to evaluate effective, implementable means to minimize pinniped entrapment. Marine mammal rescue cages, in use at coastal generating stations since the mid-1970s, would be deployed at the Reliant Energy Mandalay generating station intake canal to allow the release of live animals should this situation arise.

Reliant Energy 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 (805) 896-7233.

Sincerely,

Reliant Energy Mandalay Generating Station



Julie Anne Babcock
Environmental Manager

RELIANT ENERGY MANDALAY GENERATING STATION

**Marine Mammal Protection Act
Small Take Permit Application**

September 2001

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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 Reliant Energy Mandalay generating station's cooling water system	1
Incidental takings by the cooling system intake	3
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	4
California sea lion	4
Harbor seal	4
Northern elephant seal	5
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	5
California sea lion	5
Harbor seal	5
Northern elephant seal	6
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	6
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	6
California sea lion	7
Harbor seal	7
Northern elephant seal	7
7. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE SPECIES OR STOCK OF MARINE MAMMAL	7
8. THE ANTICIPATED IMPACT OF THE ACTIVITY ON THE AVAILABILITY OF THE SPECIES OR STOCKS OF MARINE MAMMALS FOR SUBSISTENCE USES	8
9. THE ANTICIPATED IMPACT OF THE ACTIVITY UPON THE HABITAT OF THE MARINE MAMMAL POPULATIONS, AND THE LIKELIHOOD OF RESTORATION OF THE AFFECTED HABITAT	8
10. THE ANTICIPATED IMPACT OF THE LOSS OR MODIFICATION OF THE HABITAT OF THE MARINE MAMMAL POPULATIONS INVOLVED	8

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 9

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 10

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 10

14. SUGGESTED MEANS OF LEARNING OF, ENCOURAGING, AND COORDINATING RESEARCH OPPORTUNITIES, PLANS, AND ACTIVITIES RELATING TO REDUCING SUCH INCIDENTAL TAKING AND EVALUATING ITS EFFECTS 10

LITERATURE CITED 10

ATTACHMENT
 Marine Mammal Stranding Report.

LIST OF FIGURES

Figure 1. Location of Reliant Energy Mandalay generating station 2

Figure 2. Diagram of the Edison Canal used for cooling water at Reliant Energy Mandalay generating station. 3

**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.

Formerly called the Mandalay Generating Station, the Reliant Energy Mandalay generating station was sold to Houston Industries, now known as Reliant Energy, in April 1998. The generating station is operated by Reliant Energy personnel. The Reliant Energy Mandalay generating station is located on the southern California coast approximately 4.8 km west of the city of Oxnard (Figure 1). Reliant Energy Mandalay generating station consists of two steam-electric generating units, each rated at 215 megawatts (Mw), and one gas turbine unit rated at 147 Mw, for a total capacity of 577 Mw. Steam is supplied to the steam-electric units by two oil- or gas-fired boilers, each rated at 707,600 kg of steam/hr.

A take occurs when a pinniped enters Edison Canal from Channel Islands Harbor, 4.8 km downcoast of the generating station. Continuous cooling water flow is necessary for generation of electricity and for the safety of the plant. In November 2000, a deceased California sea lion was discovered in Edison Canal. Occurrence of seals and sea lions in the Canal is expected to continue.

Design and history of Reliant Energy Mandalay generating station's cooling water system.

Ocean water for cooling purposes is supplied to the Reliant Energy Mandalay generating station via a single cooling water system. Cooling water is drawn into the plant through Edison Canal, which originates approximately 2.5 mi away at the northern end of Channel Islands Harbor in Oxnard, California (Figure 2). Velocity in the intake canal is approximately 0.2 meters per second (m/s). Four circulating water pumps with a total capacity of 176,000 gallons per minute (gpm) (approximately 253 million gallons per day [mgd]) direct cooling water flow to a screening facility within the plant. The four circulating water pumps supply 166,000 gpm to the main condensers to condense exhaust steam from the turbines and 10,000 gpm to auxiliary heat exchangers for bearing cooling and other plant equipment cooling functions. Once in the plant, water enters the screen structure at the terminus of the canal. Here, water passes through trash bars and vertical sliding screens which prevent debris, fish, and invertebrates from entering the CWS. The trash bars consist of vertical steel bars with 2.25" openings. Beyond the trash racks, the water is conveyed through two sets of vertical sliding screens with 5/8" mesh for removal of small debris, fish, and macroinvertebrates. Design velocity through the screens is 0.8 m/s, though measurements have shown mean velocities through the two sets of screens of 0.4 and 2.1 m/s (MBC 1983). Debris, fish, and invertebrates are removed from the screens by high-pressure sprays and conveyed to trash baskets for disposal.

The cooling water is then pumped to four horizontal centrifugal circulating pumps set in a dry well. Leaving the pumps, water flows to the main condensers through four 1.4-m (4.5-ft) ID pipes. Flows from the condensers are then joined in a 2.7-m (9-ft) ID discharge pipe, and then into a 61.0-m (200-ft) long rock-lined canal, where it flows across the beach at a velocity of 0.8 m/s into the ocean.

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 boiler

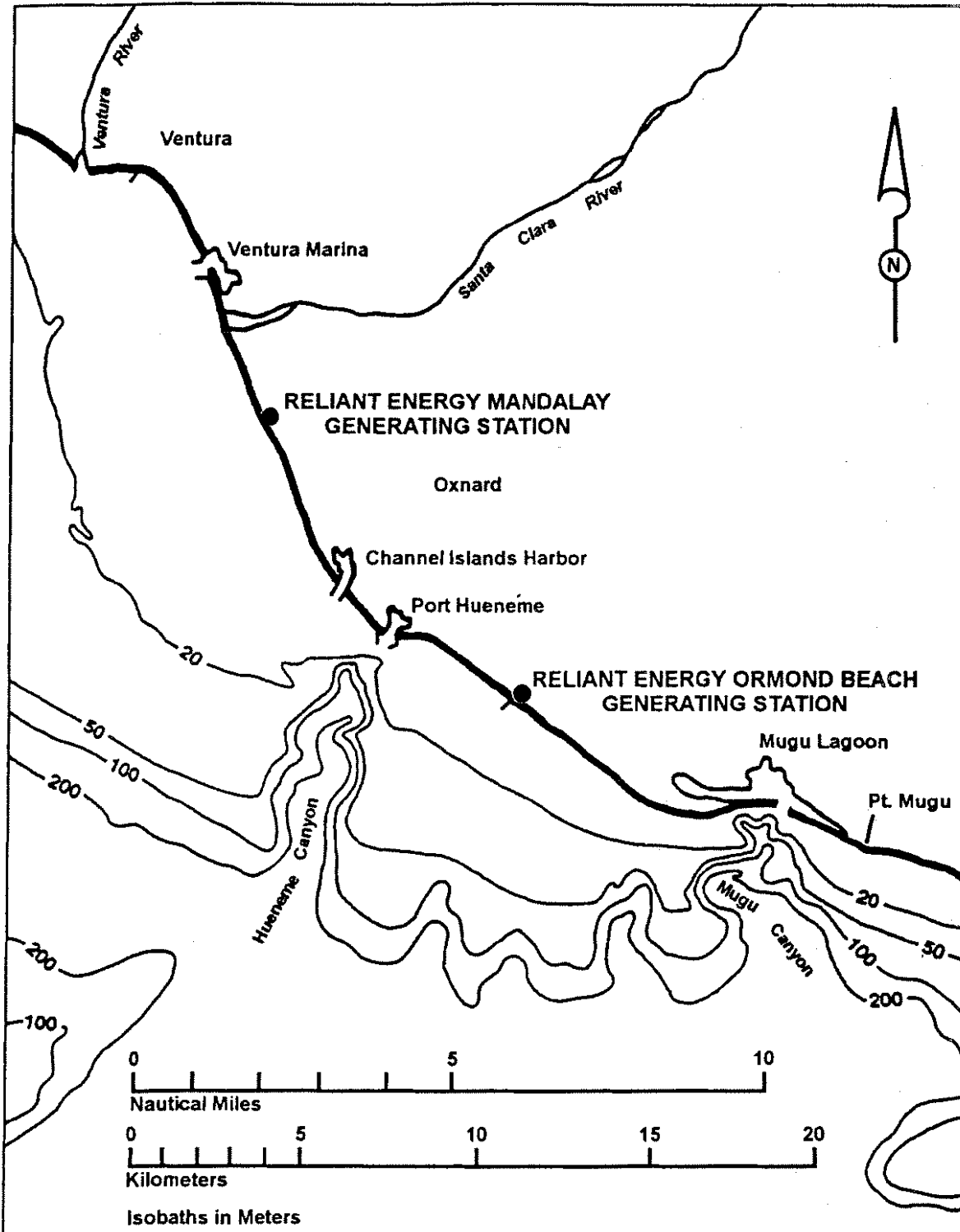


Figure 1. Location of the Reliant Energy Mandalay generating station.

condensate overboard, yard drains, in-plant drains, floor drains, and sampling streams are either discharged to a retention basin and/or chemically treated prior to ocean discharge, or taken off-site to an appropriate disposal facility. These wastes are generated infrequently (LARWQCB 1994).

Incidental takings by cooling system intake.

Pinniped have been sighted in Edison Canal periodically in the last 20 years. Since 1977, however, only one pinniped has been removed from Edison Canal. Since flow velocity is relatively low in the Canal (0.2 m/s or less), it is reasonable to assume a live pinniped could swim freely within Channel Islands Harbor and Edison Canal. Trash racks inside the generating station prevent animals from entering the plant. Though the individual California sea lion discovered in 2000 was deceased,

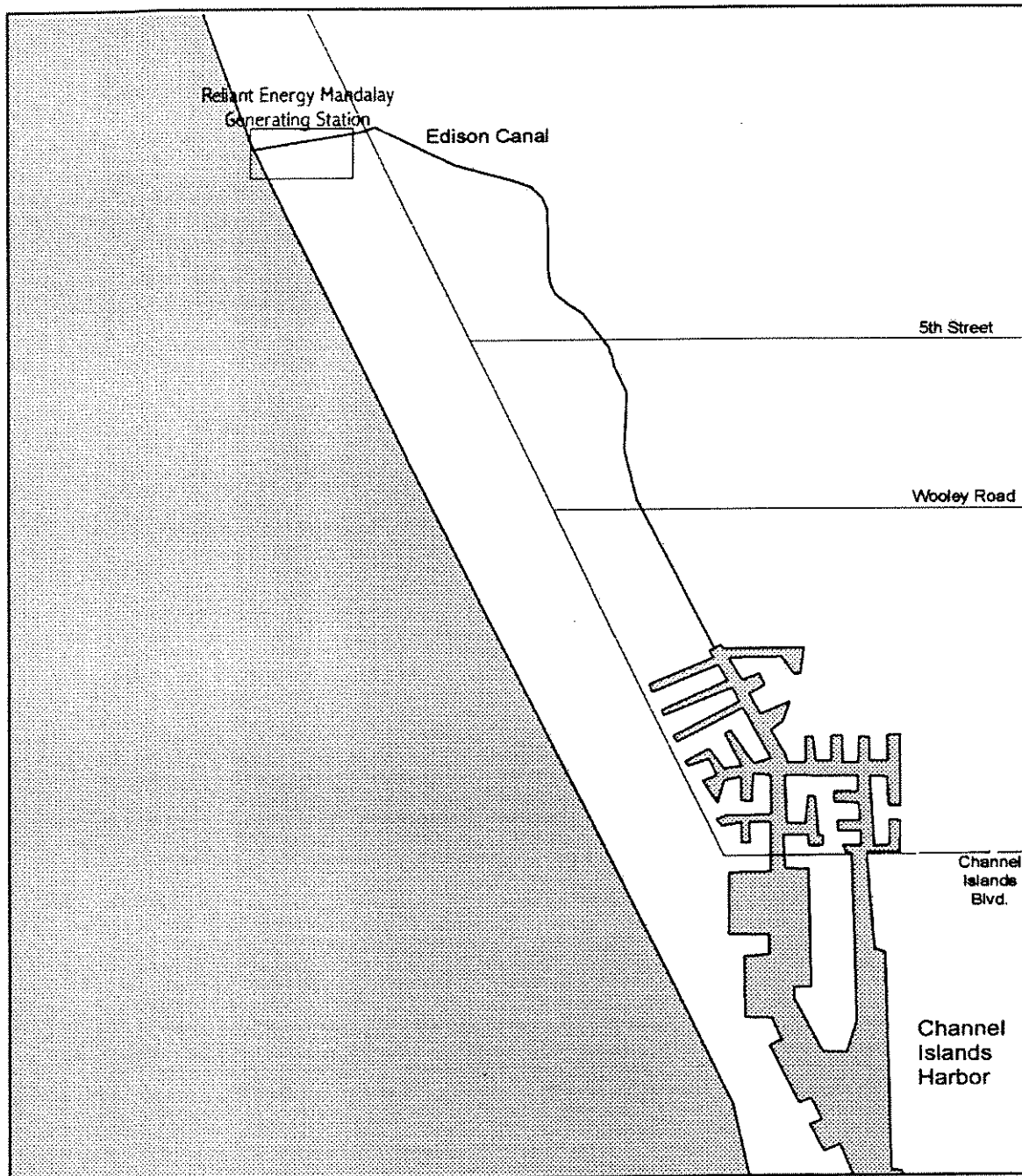


Figure 2. Diagram of the Edison Canal used for cooling water at the Reliant Energy Mandalay generating station.

live pinnipeds could survive in Edison Canal. Once in the canal, individuals could 1) swim out of the Canal and back into Channel Islands Harbor, 2) succumb in the Canal due to exhaustion, illness, or disease, or 3) survive in the Canal and be removed by a specialized cage designed for rescuing pinnipeds. Healthy pinnipeds will subsequently be released to the ocean. Visibly ill or injured marine mammals will be 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 Reliant Energy Mandalay generating station intake canal, where the takes occur, is illustrated in Figure 2. The intake originates at the northern end of Channel Islands Harbor, Oxnard California. Flow in the canal is directed approximately 2.5 miles to the generating station.

Only one pinniped has been removed in Edison Canal since 1977; a California sea lion carcass was discovered on 13 November 2000. It is reasonable to assume that seal/sea lion takes will continue throughout the plant's operating life, or until about 2020.

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 Reliant Energy Mandalay 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 have continued to increase off the southern California coast 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 Reliant Energy Mandalay generating station during annual NPDES monitoring surveys (Marine Biological Consultants 1979, 1981; MBC 1986, 1988, 1990, 1994-2000; Ogden 1991-1993). The 2000 population estimates derived for the three pinniped species likely to occur in the study area are from Fomey 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 214,000 to 204,000, respectively. 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 northern 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 Reliant Energy Ormond Beach 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 Reliant Energy Mandalay generating station circulating water system intake as described in Section 1.

Harassment occurs when pinnipeds enter the intake canal (as described in Section 1), and are recovered by plant personnel by use of marine mammal cages. Animals in the cages are subsequently released unharmed to the ocean. Pinnipeds can potentially be injured prior to entrainment, or injured once inside the intake canal. The California sea lion found in Edison Canal in November 2000 was found dead. Cause of death could not be 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 Reliant Energy Mandalay generating station circulating water system. The anticipated number of takes of California sea lions, harbor seals, and northern elephant seals may increase as a result of the continued population increase in southern California waters. Pacific harbor seals and northern elephant seals have not been taken by the generating station.

California sea lion

One California sea lion has been removed from Edison Canal since 1977. The deceased individual was 48 inches in length, and weighed approximately 80 pounds. Based on this information, the individual was likely a juvenile

Harbor seal

No harbor seals have been entrained by the Reliant Energy Mandalay generating station CWS since 1977. Continued population increases of this species in southern California waters could increase the likelihood of Pacific harbor seal entrainments in the cooling water system of the generating station.

Northern elephant seal

No known entrainments of northern elephant seals have occurred at the Reliant Energy Mandalay 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.

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

Only California sea lion has been removed from the intake canal of the Reliant Energy Mandalay generating. Pacific harbor seal and northern elephant seal could potentially become entrained in the cooling water system, but to date, have not been entrained. The continued operation of the Reliant Energy Mandalay 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 (SWFSC 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 Reliant Energy Mandalay 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 Reliant Energy Mandalay generating station is expected to be one individual. Only one individual (in 2000) has been taken since 1979. This represents less than 0.1% of the total takes and 0.02% 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. Therefore, any incidental take from the generating station, combined with incidental takes, would be considered insignificant.

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 Reliant Energy Mandalay

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 nine 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 Reliant Energy Mandalay 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 Reliant Energy Mandalay 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 Oxnard, as populations therein remain healthy, abundant, and diverse (MBC 2000). Pinnipeds likely enter Edison Canal out of curiosity or in search of, or in pursuit of, prey items.

Warmed effluent from the Reliant Energy Mandalay generating station is usually detected in the vicinity of the discharge during sampling (MBC 1990, 1994-2000). Warm waters, 1°C or less, generally extend to other water quality stations located 1,180 ft upcoast and downcoast from the discharge in the surf zone. The discharge of warm water has not modified the habitat of seals or sea lions.

The operation of the Reliant Energy Mandalay generating station requires the presence of an intake canal for the conveyance of ocean water for cooling purposes. Edison Canal conveys water for cooling purposes from Channel Islands Harbor to the generating station. Live pinnipeds that enter the Canal can potentially swim back into Channel Islands Harbor, as current velocities in the Canal are low (less than 0.2 m/s). The ultimate fate of the intake and discharge canals is unknown. Once the plant is decommissioned, the canals could be filled if there is no local interest or demand for their presence.

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

The continued operation of the Reliant Energy Mandalay 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 physico-chemical conditions in the vicinity of the discharge canal (MBC 1990, 1994-2000). 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 the operation of the plant, though pinnipeds may enter the canal from Channel Islands Harbor in search of or in pursuit of prey items.

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 Reliant Energy Mandalay generating station would require either physical barriers or some method(s) to discourage their presence in Edison Canal. As detailed previously, the generating station is not directly impacting seal/sea lion habitat, and there are no subsistence fisheries in southern California. With no significant projected impacts from the generating station to pinniped populations, or to sensitive habitat, the primary purpose of any proposed actions is the prevention of seal/sea lion takes, including live and lethal takes, by the entrapment of these animals in the intake canal of the Reliant Energy Mandalay generating station.

In the mid-1970s, specialized cages were designed and deployed at SCE and LADWP coastal generating stations, including the Reliant Energy Mandalay 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. If a pinniped is observed in the intake canal, a floating marine mammal cage can be deployed in the canal to capture the animal. Once the mammal enters the cage, its weight deploys a treadle that closes a gate, preventing the mammal from exiting. At this time, the cage can be lifted out of the canal by crane, and observations and data can be recorded on available data sheets concerning the pinniped. An example of the data sheet is presented in Appendix 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 will be transferred to personnel trained in the health and rehabilitation of marine mammals at a designated facility off-site.

Numerous options to minimize pinniped entrainment, including lights, sound, and marine mammal exclusion bars, have been considered, and most were considered unfeasible. These options were considered primarily with respect to entrainment of ichthyoplankton and impingement of fish; however, they may be applicable to marine mammals. Installation of flashing lights 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. The improved design of the marine mammal rescue devices, incorporated in the late 1980s, has enhanced rescue operations at several power plants in southern California.

Earlier examples of options to minimize entrainment and impingement included modifying the vertical traveling screens, installing a louver guidance system, and reducing intake flow (MBC 1983). However, at the time, these options were removed from consideration due to their relatively low incremental minimization of entrainment and impingement losses 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 Edison Canal are performed by plant operators. When a live pinniped is observed, a marine mammal cage will be deployed in the canal so the mammal can be rescued quickly. Pinniped carcasses are reported to NMFS and disposed of at an appropriate site. Live pinnipeds will be inspected for external injuries. Non-injured animals will be released at nearby beach sites, while injured or unhealthy animals will be released to a qualified rescue organization.

As required by the NPDES permit of the Reliant Energy Mandalay generating station, marine monitoring studies (including but not limited to annual offshore water quality, fish trawls, macroinvertebrate dive surveys, sediment chemistry studies, and analysis of benthic infauna) conducted offshore the generating station occur annually. During field activities associated with these programs, presence, abundance and location of marine mammals, such as seals, sea lions, whales, and dolphins, are noted. This information is made available in annual NPDES monitoring reports (Marine Biological Consultants 1979, 1981; MBC 1986, 1988, 1990, 1994-2000; Ogden 1991-1993).

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

Reliant Energy Mandalay generating station continues to explore options related to the reduction of effects on marine life, including marine mammals. Reliant Energy will attend periodic meetings between the various generating facilities and NMFS to pool knowledge and efforts to reduce entrainment of marine mammals. Reliant Energy will also continue to consult with NMFS to ensure the least possible effect from plant operations on 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: <input type="checkbox"/> Yes <input type="checkbox"/> No # Animals _____ Human Interaction: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> ? Check one: <input type="checkbox"/> 1. Boat Collision <input type="checkbox"/> 2. Shot <input type="checkbox"/> 3. Fishery Interaction <input type="checkbox"/> 4. Other _____ How determined: _____ Other Causes (if known): _____
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DATE OF INITIAL OBSERVATION: Yr. _____ Mo. _____ Day _____ CONDITION: Check one: <input type="checkbox"/> 1. Alive <input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 3. Moderate decomp. <input type="checkbox"/> 4. Advanced decomp. <input type="checkbox"/> 5. Mummified <input type="checkbox"/> 7. Unknown	DATE OF EXAMINATION: Yr. _____ Mo. _____ Day _____ CONDITION: Check one: <input type="checkbox"/> 1. Alive <input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 3. Moderate decomp. <input type="checkbox"/> 4. Advanced decomp. <input type="checkbox"/> 5. Mummified <input type="checkbox"/> 7. Unknown
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LIVE ANIMAL — Condition and Disposition: Check one or more: <input type="checkbox"/> 1. Released at site <input type="checkbox"/> 2. Sick <input type="checkbox"/> 3. Injured <input type="checkbox"/> 4. Died <input type="checkbox"/> 5. Euthanized <input type="checkbox"/> 6. Rehabilitated and released <input type="checkbox"/> 7. Unknown Transported to: _____ <input type="checkbox"/> Died <input type="checkbox"/> Released Date: _____	TAGS APPLIED?: <input type="checkbox"/> Yes <input type="checkbox"/> No TAGS PRESENT?: <input type="checkbox"/> Yes <input type="checkbox"/> No <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Dorsal</td> <td style="text-align: center;">Left</td> <td style="text-align: center;">Right</td> </tr> <tr> <td>Tag No.(s):</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Color(s):</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Type:</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>Placement</td> <td></td> <td style="text-align: center;">Front/Rear</td> <td style="text-align: center;">Front/Rear</td> </tr> </table>		Dorsal	Left	Right	Tag No.(s):	_____	_____	_____	Color(s):	_____	_____	_____	Type:	_____	_____	_____	Placement		Front/Rear	Front/Rear
	Dorsal	Left	Right																		
Tag No.(s):	_____	_____	_____																		
Color(s):	_____	_____	_____																		
Type:	_____	_____	_____																		
Placement		Front/Rear	Front/Rear																		

CARCASS — Disposition: Check one: <input type="checkbox"/> 1. Left at site <input type="checkbox"/> 2. Buried <input type="checkbox"/> 3. Towed <input type="checkbox"/> 4. Sci. collection: (see below) <input type="checkbox"/> 5. Edu. collection: (see below) <input type="checkbox"/> 6. Other _____ <input type="checkbox"/> 7. Unknown NECROPSIED? <input type="checkbox"/> Yes <input type="checkbox"/> No	MORPHOLOGICAL DATA: Sex — Check one: <input type="checkbox"/> 1. Male <input type="checkbox"/> 2. Female <input type="checkbox"/> 7. Unknown Straight Length: _____ <input type="checkbox"/> cm <input type="checkbox"/> in <input type="checkbox"/> est *Weight _____ <input type="checkbox"/> kg <input type="checkbox"/> lb <input type="checkbox"/> est PHOTOS TAKEN? <input type="checkbox"/> Yes <input type="checkbox"/> No
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REMARKS: _____

 DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

