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Affiliate of Renewable Energy Innovations, LLC

April 10, 2012

Application for an Incidental Harassment Authorization, for taking of small numbers of marine mammals by harassment, pursuant to 1994 amendments to the Marine Mammal Protection Act of 1972, section 101 (a)(5).

Location: Area offshore of Kakaako, island of Oahu, Hawaii

Applicant: Honolulu Seawater Air Conditioning, LLC
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Determination that an Incidental Harassment Authorization is the appropriate permitting option for the subject activity:

1) Is there any potential for serious injury or mortality to marine mammals in the area of activity?

The applicant, Honolulu Seawater Air Conditioning, LLC, will be driving steel sheet piles and cylindrical steel piles in the realization of the district cooling renewable energy project. It is anticipated that noise from the pile driving operations may modify behavior of marine mammals known to transit the area occasionally. If noise levels during pile driving exceed 180 db, there exists a potential of harming marine mammals. Except for the Hawaiian Monk Seal, marine mammals, if found in the activity area, are generally transiting the activity area. If disturbed by elevated noise levels, it is likely the marine mammals will swim in the direction opposite of the sound and avoid any perceived danger. In these circumstances the risk of serious injury or death to transitory animals is nil. In the low probability event that a marine mammal ventures undetected to a zone of noise level exceeding 180 db, the marine mammal could experience temporary or permanent injury.

2) Can the potential for serious injury or mortality be negated through mitigation requirements that could be required under the authorization?

As indicated above there is the possibility of injury or mortality, however appropriate mitigation measures would be required under the authorization. Injury to transitory marine mammals, can be mitigated by establishing observation posts to identify marine mammals entering within a pre-specified area and immediately halting pile driving activities when marine mammals are found in the area. Prior to pile driving operations, the observation posts would be responsible for ensuring no pile driving operations commence until all marine mammals are cleared of the area. Additional mitigation measures are included in section 11 below.

Information required for consideration by the National Marine Fisheries Service of an application for Incidental Harassment Authorization:

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

The proposed action is described in the Final EIS issued by the US Army Corps of Engineers, Honolulu District (USACE) and the Biological Assessment, and consists of the USACE issuing a permit to HSWAC that would authorize the installation of a seawater air conditioning project at Kaka'ako, Honolulu, Hawaii. In summary, the project consists of the operation of land-based and barge-mounted heavy equipment to: install a 63-inch diameter seawater intake pipe that would extend about 25,000 feet offshore and a 54-inch diameter seawater return pipe that would extend about 3,700 feet offshore; construct a land-based pump station; and construct a chilled water distribution system between the pump station and customer buildings. The intake pipe would terminate at a depth of about 1,755 feet, and end in an elbow, such that the open ended intake would be oriented toward the surface about 14 feet above the seafloor. The seawater return pipe would terminate in a 25-port diffuser that extends between the depths of 120 and 150 feet. Of concern for this consultation would be the work to install the pipelines, as well as the operation of the system.

Pipeline installation work would consist of digging an onshore "jacking pit" as well as a 40-foot by 40-foot by 20-foot deep offshore "receiving pit" in about 30-foot deep water about 1,800 feet offshore. Construction of the receiving pit would begin in September of 2012. Work would include the use of a barge-mounted vibratory pile driver to install 24-inch steel sheet piles around the perimeter of the receiving pit, as well as a barge-mounted excavator to dig the pit. Dredge spoils would be barged to shore for disposal. This work would last about one month, including about 10 8-hour days of pile driving. The sheet piles will be driven with a vibratory hammer creating and estimated 163 dB RMS at 10 meters. A combination of the sheet piles and a floating silt curtain would be used to contain suspended sediments that would result from the digging and the tunneling.

A micro-tunneling machine would bore a tunnel for each pipeline from the jacking pit out to the receiving pit where the machine would be recovered. Alternatively, a single tunnel capable of accommodating both pipelines could be drilled. Tunnel spoils would be extracted via the onshore jacking pit and disposed of on land. Working from the jacking pit; reinforced concrete (or steel) pipe outer casing(s) would be installed through the tunnel(s), fiberglass pipelines would be installed inside the casing(s), and the resulting annuli around the pipes would be grouted. Micro tunneling and installation of the outer casing(s) would take 6 to 7 months. Installation of the carrier pipelines and annulus grouting would take an additional 1 to 2 months.

At about the same time as when the receiving pit is being constructed, the applicant would use a hydraulic impact hammer to drive about 10 to 12 20-inch diameter steel pipe "test piles" between the receiving pit, along the pipe alignment, to a depth of approximately 150 feet deep. Test piles require about 15 minutes of pile driving each. It is anticipated the test piles will be driven in approximately 1 to 2 weeks. The hydraulic impact hammer is expected to produce 187 dB RMS at 10 meters based on 20 inch AZ sheet piles.

At the same time, the applicant would begin construction of the high density polyethylene (HDPE) pipelines that would extend seaward from the receiving pit. Working on land, adjacent to the seaplane runway at Ke'ehi Lagoon, the applicant would operate an HDPE fusion machine that uses heat and pressure (no glues) to join the

ends of pipe sections to create 3,300 ft long sections. The 3,300 ft long pipe sections would be temporarily closed with a blind flange on each end, and would float. These sections would be deployed onto the water of the seaplane runway as they are constructed. Operating from a barge, stiffeners and concrete collars would be attached to the pipes while they float, and the finished pipe sections would be stored in Ke'ehi Lagoon until installation time.

Offshore pipeline deployment would occur between the late fall and early winter of 2013. If pipe assembly is delayed, the offshore pipeline deployment would occur during the late winter/early spring of 2014. Just prior to deployment of the off shore pipelines, multiple barges and work boats would begin joining the floating pipe sections into a single assembly. The first section, up to 4,500 feet long would consist of the intake and discharge pipes held together in parallel by shared concrete collars. The remaining length of intake pipe would consist of the intake pipe and its concrete collars.

Once all segments have been joined, the entire length of pipe would be towed into place in a single day. The pipe would be sunk at night to avoid the effects of sunlight-induced differential heating of the pipe. Using controlled flooding, the shoreward end of the pipeline would be sunk close to the receiving pit where it would be held in place with anchors or piles while the seaward end is held under tension by a minimum of three tugboats. The pipeline would be lowered to the seafloor, shallow to deep, by continued controlled flooding. The blind flange would be removed from the seaward end of the intake pipe, and the pipe would be lowered to the bottom with a lowering cable threaded through the last collar. A remotely operated vehicle (ROV) would monitor the pipe's deployment on the seafloor to confirm its proper location and condition prior to the release of the lowering cable.

Divers would bolt "spool pieces" between the nearshore ends of the offshore pipelines and the pipe ends in the receiving pit to complete the connection. The pit would be backfilled with pre-washed crushed basalt gravel, then capped with tremie-concrete. The piles would be extracted, or cut-off just below the existing seafloor. This work would take about a week to complete.

Between the receiving pit and approximately 150 foot depth, the pipeline would be held down by a combination of the weight of 91 concrete collars and the installation of 113 20-inch diameter steel pipe piles that would be impact driven though the sleeves of some of the concrete collars. Fifty-two collars would have two piles each. Nine more collars would have a single pile. An airlift siphon would be used to remove the top 6 feet of substrate from inside the piles. Spoils would be barged to shore for proper disposal. Tremie concrete would be used to fill and cap each pile. Each pile would take about 15 minutes to drive, and the applicant estimates that 3 to 4 piles would be driven per day. This work would be completed in approximately 4 to 6 weeks. Beyond the diffuser, the intake pipe would be held in place by the weight of the 873 concrete collars alone. The sheet piles will be driven with a vibratory hammer creating and estimated 163 dB RMS at 10 meters.

To summarize there are three activities that are expected to result in incidental harassment taking of marine mammals:

1. Sheet pile driving at the breakout point receiving pit
2. Test pile driving
3. Pipe pile driving at the concrete collars up to 150 feet deep

(3) The species and numbers of marine mammals likely to be found within the activity area:

The following marine mammal species may be present in the waters offshore of Kakaako Waterfront Park during the activity described above based on the habitat descriptions found in the U.S. PACIFIC MARINE MAMMAL STOCK ASSESSMENTS: 2010 dated June 2011 by the National Marine Fisheries Service (SAR) Also included is the number of each species that could enter the sound zone considered to modify a marine mammal's behavior:

		Expected "Take"						
	Species	Test Pile Driving	Sheet Pile Driving	Pipe Pile Driving	Abundance in Hawaii	Season	ESA Status	MMPA Status
Whales								
	Blainville's beaked whales	6	6	12	2872	Year round	N/L	N/L
	Blue whale	3	3	6	N/A	Bimodal Winter/ Summer	Endangered	D, S
	Bryde's whale	3	3	6	469	Year round	N/L	N/L
	Cuvier's beaked whale	12	12	24	15242	Year round	N/L	N/L
	Dwarf sperm whale	15	15	30	17519	N/A	N/L	N/L
	False killer whale	3	3	6	484	Year round	Proposed	N/L
	Humpback whale[1]	12	12	24	10000	Winter	Endangered	D, S
	Killer whale	3	3	6	349	N/A	N/L	Strategic
	Longman's beaked whale	3	3	6	1007	N/A	N/L	N/L
	Melon-headed whale	6	6	12	2950	N/A	N/L	N/L
	Minke Whale	3	3	6	N/A	Winter		
	Pilot Whale, short finned	9	9	18	8846	Year round	N/L	N/L
	Pygmy killer whale	3	3	6	956	Year round	N/L	N/L
	Pygmy sperm whale	9	9	18	7138	N/A	N/L	N/L
	Sei whale	3	3	6	77	Year round	Endangered	D, S
	Sperm whale	9	9	18	6919	Year round	Endangered	D, S
Dolphins								
	Bottlenose dolphin	20	20	40	3178	Year round	N/L	N/L
	Fraser's dolphin	60	60	120	10226	Year round	N/L	N/L
	Risso's dolphin	20	20	40	2372	Year round	N/L	N/L
	Rough-toothed dolphin	30	30	60	8709	Year round	N/L	N/L
	Spinner dolphin	20	20	40	3351	Year round	N/L	N/L
	Pantropical spotted dolphin	30	30	60	8978	Year round	N/L	N/L
	Striped dolphin	90	90	180	13143	Year round	N/L	N/L
Seals								
	Monk Seal	3	12	24	1161	Year round	Endangered	D, S
	N/A = not available	1. Humpback whale stocks are defined by feeding grounds. Hawaii is not included as a feeding ground. This is an estimate of the Hawaii Humpback population during winter based on 66% of the Pacific stock						
	N/L = not listed							
	D = depleted							
	S - Strategic							

Table 1. Species, potential take, abundance, seasonality and status of marine mammals found in Hawaii

(4) A description of the a) status, b) distribution, and c) seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities:

a) Status: Please see Table 1 for ESA and MMPA listed status of all marine mammal species that may enter the activity area.

b) Distribution:

Blainville's Beaked Whale: Blainville's beaked whale has a cosmopolitan distribution in tropical and temperate waters, apparently the most extensive known distribution of any *Mesoplodon* species (Mead 1989). Two strandings were reported in 1961 from Midway Island (Galbreath 1963) and another in 1983 from Laysan Island (Nitta 1991). Sixteen sightings were reported from the main islands by Shallenberger (1981), who suggested that Blainville's beaked whales were present off the Waianae Coast of Oahu for prolonged periods annually. Resightings of individual Blainville's beaked whales during a 21-yr study suggests long-term site fidelity and year round occurrence off the island of Hawaii (McSweeney et al. 2007). Three *Mesoplodon* stocks are defined within the Pacific U.S. EEZ: 1) *M. densirostris* in Hawaiian waters, 2) *M. stejnegeri* in Alaskan waters, and 3) all *Mesoplodon* species off California, Oregon and Washington.

Blue Whale: Acoustic recordings made off Hawaii showed bimodal peaks throughout the year (Stafford et al. 2001), with central Pacific call types heard during winter and eastern Pacific calls heard during summer. There are two blue whale stocks within the Pacific U.S. EEZ: 1) the central North Pacific stock (this report), which includes whales found around the Hawaiian Islands during winter and 2) the eastern North Pacific stock, which feeds primarily off California.

Bryde's Whale: Bryde's whales occur in tropical and warm temperate waters throughout the world. Bryde's whales within the Pacific U.S. EEZ are divided into two areas: 1) Hawaiian waters , and 2) the eastern Pacific (east of 150oW and including the Gulf of California and waters off California). The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Cuvier's Beaked Whale: Cuvier's beaked whales occur in all oceans and major seas (Heyning 1989). Cuvier's beaked whales within the Pacific U.S. EEZ are divided into three discrete, non-contiguous areas: 1) Hawaiian waters , 2) Alaskan waters, and 3) waters off California, Oregon and Washington.

Dwarf Sperm Whales: Dwarf sperm whales are found throughout the world in tropical to warm-temperate waters (Nagorsen 1985). Dwarf sperm whales within the Pacific U.S. EEZ are divided into two discrete, non-contiguous areas: 1) Hawaiian waters (this report), and 2) waters off California, Oregon and Washington.

False Killer Whales: False killer whales are found worldwide mainly in tropical and warm- temperate waters (Stacey et al. 1994). In the North Pacific, this species is well known from southern Japan, Hawaii, and the eastern tropical Pacific. There are currently four Pacific Islands Region management stocks (Chivers et al. 2008): 1) the Hawaii insular stock, which includes animals inhabiting waters within 140 km (approx. 75 nmi) of the main Hawaiian Islands, and 2) the Hawaii pelagic stock, which includes false killer whales inhabiting waters greater than 40 km (22 nmi) from the main Hawaiian Islands, 3) the Palmyra Atoll stock, which includes false

killer whales found within the U.S. EEZ of Palmyra Atoll, and 4) the American Samoa stock, which includes false killer whales found within the U.S. EEZ of American Samoa.

Humpback Whales: Humpback whales in the North Pacific feed in coastal waters from California to Russia and in the Bering Sea. They migrate south to wintering destinations off Mexico, Central America, Hawaii, southern Japan, and the Philippines. Humpback whale stocks are defined by feeding area of which Hawaii is not one. Stock assessment reports are based on feeding areas and no stock assessment report exists for Humpback whales in Hawaiian waters. With about 66% of the North Pacific population wintering in Hawaii each year, up to 10,000 humpback whales spend the winter months in Hawaii. While in Hawaii, they do not feed, but rely upon stored energy. Near the islands, the whales devote most of their time to mating and giving birth to their calves.

Killer Whales: Killer whales have been observed in all oceans and seas of the world (Leatherwood and Dahlheim 1978). Although reported from tropical and offshore waters (Heyning and Dahlheim 1988), killer whales prefer the colder waters of both hemispheres, with greatest abundances found within 800 km of major continents (Mitchell 1975). They are considered rare in Hawaiian waters. Except in the northeastern Pacific where coastal waters of Alaska, British Columbia, and Washington to California (Bigg 1982; Leatherwood et al. 1990, Bigg et al. 1990, Ford et al. 1994), little is known about stock structure of killer whales in the North Pacific. Eight killer whale stocks are recognized within the Pacific U.S. EEZ: 1) the Eastern North Pacific Alaska Resident stock - occurring from southeastern Alaska to the Aleutian Islands and Bering Sea, 2) the Eastern North Pacific Northern Resident stock - occurring from British Columbia through part of southeastern Alaska, 3) the Eastern North Pacific Southern Resident stock – occurring mainly within the inland waters of Washington State and southern British Columbia, but also in coastal waters from British Columbia through California, 4) the Eastern North Pacific Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock - occurring mainly from Prince William Sound through the Aleutian Islands and Bering Sea, 5) the AT1 Transient stock - occurring in Alaska from Prince William Sound through the Kenai Fjords, 6) the West Coast Transient stock - occurring from California through southeastern Alaska, 7) the Eastern North Pacific Offshore stock - occurring from California through Alaska, and 8) the Hawaiian stock. The Hawaii stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters;

Longman's Beaked Whale: Longman's beaked whale is considered one of the rarest and least known cetacean species (Jefferson et al. 1993; Rice 1998; Dalebout et al 2003). The distribution of Longman's beaked whale, as determined from stranded specimens and sighting records of 'tropical bottlenose whales', includes tropical waters from the eastern Pacific westward through the Indian Ocean to the eastern coast of Africa. There is one Pacific stock of Longman's beaked whales, found within waters of the Hawaiian Islands EEZ. This stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Melon-headed Whales: Melon-headed whales are found in tropical and warm-temperate waters throughout the world. Large herds are seen regularly in Hawaiian waters, especially off the Waianae coast of Oahu, the north Kohala coast of Hawaii, and the leeward coast of Lanai (Shallenberger 1981). There is a single Pacific management stock including animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Minke Whales: The International Whaling Commission recognizes 3 stocks of minke whales in the North Pacific: one in the Sea of Japan/East China Sea, one in the rest of the western Pacific west of 180oN, and one in the "remainder" of the Pacific (Donovan 1991). The "remainder" stock only reflects the lack of exploitation in the eastern Pacific and does not imply that only one population exists in that area (Donovan 1991). In the "remainder" area, minke whales are relatively common in the Bering and Chukchi seas and in the Gulf of Alaska, but are not considered abundant in any other part of the eastern Pacific (Leatherwood et al. 1982; Brueggeman et al. 1990). In the Pacific, minke whales are usually seen over continental shelves (Brueggeman et al. 1990). In the extreme north, minke whales are believed to be migratory, but in inland waters of Washington and in central California they appear to establish home ranges (Dorsey et al. 1990).
Minke whales have only been recently confirmed to occur seasonally around the Hawaiian Islands (Barlow 2003, Rankin and Barlow, 2005), and their migration routes or destinations are not known.

Short-finned Pilot Whales: Short-finned pilot whales are found in all oceans, primarily in tropical and warm-temperate waters. They are commonly observed around the main Hawaiian Islands and are also present around the Northwestern Hawaiian Islands (Shallenberger 1981; Barlow 2006). Preliminary photo- identification work with pilot whales in Hawaii indicated a high degree of site fidelity around the main island of Hawaii (Shane and McSweeney 1990) and around Kauai and Niihau (Baird et al. 2006). Short-finned pilot whales within the Pacific U.S. EEZ are divided into two discrete, non-contiguous areas: 1) Hawaiian waters (this report), and 2) waters off California, Oregon and Washington.

Pygmy Killer Whales: Pygmy killer whales are found in tropical and subtropical waters throughout the world (Ross and Leatherwood 1994). A 22-year study off the island of Hawaii suggested this species is relatively rare (1.2% of all sightings) yet occurs year-round and in stable groups. High resighting rates suggest a small-island associated population off the island of Hawaii (McSweeney *et al*. 2009). There is a single Pacific management stock including animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Pygmy Sperm Whales: Pygmy sperm whales are found throughout the world in tropical and warm-temperate waters (Caldwell and Caldwell 1989). Pygmy sperm whales within the Pacific U.S. EEZ are divided into two discrete, non-contiguous areas: 1) Hawaiian waters (this report), and 2) waters off California, Oregon and Washington. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Sei Whales: Sei whales are distributed far out to sea in temperate regions of the world and do not appear to be associated with coastal features. Whaling effort for this species was distributed continuously across the North Pacific between 45- 55oN (Masaki 1977). Sei whales within the Pacific U.S. EEZ are divided into three discrete, non-contiguous areas: 1) waters around Hawaii, 2) California, Oregon and Washington waters, and 3) Alaskan waters. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters;

Sperm Whales: Sperm whales are widely distributed across the entire North Pacific and into the southern Bering Sea in summer but the majority are thought to be south of 40oN in winter (Rice 1974, 1989; Gosho et al. 1984; Miyashita et al. 1995). Summer/fall surveys in the eastern tropical Pacific (Wade and Gerrodette 1993) show that although sperm whales are widely distributed in the tropics, their relative abundance tapers off markedly westward towards the middle of the tropical Pacific and tapers off northward towards the tip of Baja

California. Sperm whales within the Pacific U.S. EEZ are divided into three discrete, non-contiguous areas: 1) waters around Hawaii, 2) California, Oregon and Washington waters, and 3) Alaskan waters. The Hawaii stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters;

Common Bottlenose Dolphins: Common bottlenose dolphins are widely distributed throughout the world in tropical and warm-temperate waters (Perrin et al. 2009). The species is primarily coastal in much of its range, but there are populations in some offshore deepwater areas as well. Bottlenose dolphins are common throughout the Hawaiian Islands, from the island of Hawaii to Kure Atoll (Shallenberger 1981). In the Hawaiian Islands, they are found in shallow inshore waters and deep water (Baird et al. 2009). Data suggest that bottlenose dolphins in Hawaiian waters belong to a separate stock from those in the eastern tropical Pacific. Recent photo-identification and genetic studies off Oahu, Maui, Lanai, Kauai, Niihau, and Hawaii suggest limited movement of bottlenose dolphins between islands and into offshore waters (Baird et al. 2009; Martien et al. in review). These data suggest the existence of demographically distinct resident populations at each of the four main Hawaiian Island groups – Kauai & Niihau, Oahu, the '4- island Region (Molokai, Lanai, Maui, Kahoolawe), and Hawaii. In addition, the genetic data indicate that the deeper waters surrounding the main Hawaiian Islands are utilized by a larger pelagic population. Over 99% of the bottlenose dolphins known to be part of one of the insular populations photo-identified around the main Hawaiian Islands (Baird et al. 2009) have been documented in waters of 1000 m or less (Martien et al. 2009). To date, no data are available regarding population structure of bottlenose dolphins in the Northwest Hawaiian Islands (NWHI). However, given the existence of island resident populations in the main Hawaiian Islands, the larger distances between islands in the NWHI, and the finding of population structure with the NWHI in other dolphin species (Andrews 2010), it is likely that additional demographically independent populations of bottlenose dolphins exist in the NWHI. Bottlenose dolphins within the Pacific U.S. EEZ are divided into seven stocks: 1) California, Oregon and Washington offshore stock, 2) California coastal stock, 3) Kauai and Niihau, 4) Oahu, 5) the "4-Island Region" (Molokai, Lanai, Maui, Kahoolawe), 6) Hawaii Island and 7) the Hawaiian Pelagic Stock.

Fraser's Dolphins: Fraser's dolphins are distributed worldwide in tropical waters (Dolar 2009 in Perrin et al. 2009). They have only recently been documented within the U.S. Exclusive Economic Zone (EEZ) of the Hawaiian Islands. There is a single Pacific management stock including animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Risso's Dolphins: Risso's dolphins are found in tropical to warm-temperate waters worldwide (Perrin et al. 2009). They are considered rare in Hawaiian waters (Shallenberger 1981). Risso's dolphins within the Pacific U.S. EEZ are divided into two discrete, non- contiguous areas: 1) Hawaiian waters, and 2) waters off California, Oregon and Washington. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters.

Rough-toothed Dolphins: Rough-toothed dolphins are found throughout the world in tropical and warm-temperate waters (Perrin et al. 2009). They are present around all the main Hawaiian islands (Shallenberger 1981; Tomich 1986) and have been observed at least as far northwest as French Frigate Shoals (Nitta and Henderson 1993). Rough-toothed dolphins have also been documented in American Samoan waters (NMFS, PIR, unpublished data). There are two Pacific management stocks: 1) The Hawaiian Stock, and 2) the American Samoa Stock. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent international waters;

Spinner Dolphins: Six morphotypes within four subspecies of spinner dolphins have been described worldwide in tropical and warm-temperate waters (Perrin et al. 2009). The Gray's (or pantropical) spinner dolphin (*Stenella longirostris longirostris*) is the most widely distributed subspecies and is found in the Atlantic, Indian, central and western Pacific Oceans (Perrin *et al.* 1991). Within the central and western Pacific, spinner dolphins are island-associated and use shallow protected bays to rest and socialize during the day then move offshore at night to feed (Norris and Dohl 1980; Norris *et al.* 1994). They are common and abundant throughout the entire Hawaiian archipelago (Shallenberger 1981; Norris and Dohl 1980; Norris et al. 1994). Hawaiian spinner dolphins belong to a stock that is separate from those involved in the tuna purse-seine fishery in the eastern tropical Pacific (Perrin 1975; Dizon et al. 1994). The Hawaiian form is referable to the subspecies *S. longirostris longirostris*, which occurs pantropically (Perrin 1990). Recent studies on the genetic structure of spinner dolphins in the Hawaiian archipelago found significant genetic distinctions between spinner dolphins sampled at five different islands/atolls- Hawaii, Oahu/4-islands, Kauai/Niihau, Pearl and Hermes Reef, Midway Atoll/Kure (Andrews 2009, Andrews et al. 2010).

Pantropical Spotted Dolphins: Pantropical spotted dolphins are primarily found in tropical and subtropical waters worldwide (Perrin et al. 2009). Pantropical spotted dolphins are common and abundant throughout the Hawaiian archipelago, particularly in channels between islands, over offshore banks (e.g. Penguin Banks), and off the lee shores of the islands (see Shallenberger 1981). Analysis of 177 genetic samples collected throughout the main Hawaiian Islands suggests that spotted dolphins are not mating randomly across the main Hawaiian Islands, and there is clustering of genotypes, into Hawaii, Oahu, and 4-islands area regions, suggesting that individual island- associated stocks may exist (Courbis et al., in prep.). Hawaiian spotted dolphins may be split into separate island- associated stocks pending the outcome of on-going genetic analysis of these samples.

Striped dolphins: Striped dolphins are found in tropical to warm-temperate waters throughout the world (Perrin et al. 2009). Striped dolphins have been intensively exploited in the western North Pacific, where three migratory stocks are provisionally recognized (Kishiro and Kasuya 1993). In the eastern tropical Pacific all striped dolphins are provisionally considered to belong to a single stock (Dizon et al. 1994). Striped dolphins within the Pacific U.S. EEZ are divided into two discrete, non-contiguous areas: 1) waters off California, Oregon and Washington, and 2) waters around Hawaii.

Hawaiian Monk Seals: Hawaiian monk seals were first recorded in 1825 at the Hawaiian archipelago's northernmost island, Kure Atoll. Hawaiian monk seals are distributed predominantly in six Northwestern Hawaiian Islands (NWHI) subpopulations at French Frigate Shoals, Laysan and Lisianski Islands, Pearl and Hermes Reef, and Midway and Kure Atoll. Small numbers also occur at Necker, Nihoa, and the main Hawaiian Islands (MHI). Genetic variation among NWHI monk seals is extremely low and may reflect both a long-term history at low population levels and more recent human influences (Kretzmann et al. 1997, 2001, Schultz et al. 2009). On average, 10-15% of the seals migrate among the NWHI subpopulations (Johnson and Kridler 1983; Harting 2002). Thus, the NWHI subpopulations are not isolated, though the different island subpopulations have exhibited considerable demographic independence. Observed interchange of individuals among the NWHI and MHI regions is rare, yet preliminary genetic stock structure analysis (Schultz et al. in review) suggests the species is appropriately managed as a single stock.

Based on current sighting data, only a few seals are utilizing the action area for hauling out, though it is not certain how much monk seal traffic there is offshore for foraging and traveling. A pup born in 2011 at the airport is still being sighted around Reef Runway by Airport Security. There are several adults (3-4) that occasionally haul out at Magic Island, Waikiki and Diamond Head. A reasonable estimate could be based on NWHI data used to extrapolate the population based on beach counts (though this does not necessarily apply to the MHI), which is to take the # of seals seen hauled out in an area and multiply by 3. So we could say that a maximum of 12 seals may be in this area (Airport - DH) at any given time with approximately 1/3 of them hauled out and the others offshore, traveling or foraging. Pupping is not expected in the area at this time, though the same female who pupped at the airport last year could do so again this year. The blog MonkSealMania.blogspot.com provides near daily sitings of seals on Oahu.

c) Seasonal Distribution: Please see Table 1 for seasonal distribution

(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 applicant requests authorization for incidental takes, by harassment only, of all marine mammals listed in section 4 above. Harassment will only result if listed marine mammals transit one of the following two sound zones which could result in modification of the marine mammal's behavior:

1. 120 dB continuous sound zone described as a 2.5 mile radius surrounding the breakout receiving pit. The radius covers an area roughly from the middle of Waikiki Beach to the eastern end of the reef runway at Honolulu International Airport or about 10 square miles. This noise level will only occur during sheet pile driving and operations at the initial stage of constructing the receiving pit.
2. 160 dB impulse sound zone will be a 2,000 foot radius around the steel pipe pile driving rig. The zone will move along the pipe alignment as the pile driving rig completes its work. Piles will be driven along the pipe alignment from the breakout point to a depth of 150 feet, a section of approximately 1,836 feet. This noise level will only be experienced during test pile and pipe pile driving operations.

(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) of this section, and the number of times such takings by each type of taking are likely to occur:

Whales and dolphins listed in Table 1 often transit areas in pods, therefore a single take event will involve an entire pod. Whale pods tend to be smaller and dolphin pods tend to be larger. For whale species with small abundances a minimum of 3 takes is assumed based on a minimum pod size of 3 animals. For dolphin species with small abundances a minimum of 20 takes is assumed based a minimum pod size of 20 animals. Species with larger abundances are assumed to create a greater number of take events, therefore a multiple of the pod size is assumed. Take estimates indicated in Table 1 are based on the maximum numbers of animals that could reasonably be taken by incidental harassment during each of the three pile driving activities. Although it is extremely unlikely that the total take would be the sum of all take described in the table, each activity could result in take of any single species of marine mammals as shown. There is insufficient data to determine the age and sex distribution for each potential pod. Every attempt to limit Pile driving activity during the winter months due to the increase in migratory marine mammal presence will be made.

(7) The anticipated impact of the activity upon the species or stock:

The proposed pile driving activity will result in no detectable impact on the species listed in Table 1 nor any of the stocks in Hawaii as defined by NMFS or USFWS.

(8) The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses:

There is no anticipated impact of this kind. To the knowledge of the applicant, no subsistence harvest occurs for any of the species or species stocks listed in Table 1 in Hawaii.

(9) The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat:

There is no anticipated impact of the pile driving on the habitats of any of the species likely to be subject to incidental harassment as a result of the pile driving activity.

(10) The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved:

No loss or modification of the habitat of the marine mammals possibly harassed under this authorization is expected.

(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 areas of similar significance.

The following NMFS-recommended BMPs would be followed during in-water work:

1. Limit work to daylight hours so the BMPs can be carried out.
2. Constant vigilance shall be kept for the presence of Federally-listed species
3. When piloting vessels, vessel operators shall alter course to remain at least 100 yards from whales, and at least 50 yards from other marine mammals
4. Reduce vessel speed to 10 knots or less when piloting vessels in the proximity of marine mammals.
5. Marine mammals should not be encircled or trapped between multiple vessels or between vessels and the shore.
6. If approached by a marine mammal, put the engine in neutral and allow the animal to pass
7. All in-water work shall be postponed when whales are within 100 yards, or other marine mammals are within 50 yards. Activity may commence only after the animal(s) depart the area.
8. Should protected species enter the area while in-water work is already in progress, the activity may continue only when that activity has no reasonable expectation to adversely affect the animal(s).
9. Do not attempt to feed, touch, ride, or otherwise intentionally interact with any protected species.

10. Time restrictions. Construction activities, including pile driving, would only take place during daylight hours between 7 am to 5 pm, when marine mammal monitoring prior to and during the pile driving could be effectively implemented.
11. Establishment of Safety Zones. Before any pile driving, a clearly marked safety zone for potentially affected species could be established. The safety zone would be marked by buoys for easy monitoring. Biological observers on a boat would survey the safety zone to ensure that no marine mammals are seen within the zone before pile driving begins. If marine mammals are found within the safety zone, pile driving would be delayed until they move out of the area. If a marine mammal is seen above the water and then dives below, pile driving would wait a specified amount of time and if no marine mammals are seen by the observer in that time it will be assumed that the animal has moved beyond the safety zone.
12. Soft Start. Although marine mammals will be protected from harassment by establishment of a safety zone, mitigation may not be 100 percent effective at all times in locating marine mammals. In order to provide additional protection to marine mammals near the project area allowing marine mammals to vacate the area, thus further reducing the incidence of harassment from startling marine mammals with a sudden intensive sound, a "soft start" could be implemented. Under a soft start, pile driving would be initiated at an energy level less than full capacity (i.e., approximately 40-60 percent energy levels) for at least 5 minutes before gradually escalating to full capacity. This would minimize harassment of, although not expected, any marine mammals that are undetected during safety zone monitoring.

(12) 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, 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:

Not applicable. The proposed activity will not take place near a traditional Arctic subsistence hunting area, nor will the proposed activity affect the availability of a species or species stock of marine 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 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. Guidelines for developing a site-specific monitoring plan may be obtained by writing to the Director, Office of Protected Resources:

In addition to the monitoring actions in no. 11 above, monitors will be charged with observing the take area sound zones described in no. 5 above. During pipe pile driving operations in the 160 dB sound zone, a monitor on the pile driving rig will note all marine mammals observable from the surface entering the zone. Monitoring for the 120 dB sound zone will require further development.

Sound monitoring equipment will be deployed in the water during test pile driving operations and sheet pile driving operations. The purpose of the sound monitoring is to modify the sound zones if necessary and to provide information on sound propagation for future marine projects.

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

The applicant intends to coordinate monitoring activities with appropriate agencies conducting research on marine mammals in the area, including the University of Hawaii if applicable. This plan will be further developed.