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Memorandum

To: Minerals Management Service, Gulf of Mexico OCS Region, New Orleans,
Louisiana
Attention: Ms. Judy Wilson
Mr. Jeff Childs

From: Assistant Field Supervisor, Clear Lake Ecological Services Field Office, Houston,
Texas

Subject: Endangered Species Act: Biological Opinion for Western Gulf of Mexico Lease
Sale 184

This is the U.S. Fish and Wildlife Service's (Service) biological opinion for proposed lease sale 184 to be held by the Minerals Management Service (MMS) for the Western Planning Area (WPA) of the Gulf of Mexico (GOM) in August 2002. It is submitted pursuant to Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your request for formal consultation was received by the Clear Lake Ecological Services Field Office in Houston, Texas, on March 11, 2002.

This biological opinion is based on information provided in the March 2002 environmental assessment (EA) for proposed Lease Sale 184, and the April 2002 draft environmental impact statement (EIS) for the 2003-2007 multi-year lease sale in the Central Planning Area (CPA) and WPA of the GOM Outer Continental Shelf (OCS). This opinion is also based on pertinent literature, discussions with experts on threatened and endangered species in the probable impact area, and field observations of species reaction to oil spills or other onshore impacts. It is a revision of prior opinions in order to deal with newly designated critical habitat for the piping plover, expanding populations of the brown pelican, nesting of sea turtles along the Texas coast, and an effort to insure that spill contingency plans are appropriately updated.

Consultation History

Formal consultation reports are provided to the MMS for individual lease sales occurring periodically. Complete reports were provided on June 19, 1987; June 16, 1994; and April 16, 1999. For intervening lease sales, the Service only provided verification that the full reports were still valid for a particular lease sale. These reports dealt only with impacts to threatened or endangered species under the responsibility of the Service. Impacts to species under the responsibility of the National Marine Fisheries Service (NMFS) (sea turtles while at sea and marine mammals, including several species of whales) were dealt within a biological opinion from that agency.

Prior Service reports determined that work under previous lease sales was not likely to jeopardize the continued existence of listed species or adversely modify critical habitat. The Service did not anticipate any incidental take of species, provided oil spill recommendations were implemented to prevent inputs and facilitate recovery of listed species.

BIOLOGICAL OPINION

I. Description of Proposed Action

A detailed discussion of oil and gas activities in the WPA is provided in the aforementioned EA and EIS specifically addressing Lease Sale 184. Lease Sale 184 is the first sale being proposed and will offer all unleased blocks in the WPA, with the exclusion of Blocks A-375 (East Flower Garden Bank) and A-398 (West Flowers Garden Bank) in the High Island Area, East Addition, South Extension. These exclusion areas are designated national marine sanctuaries. In actuality, only a small percentage of blocks are expected to be leased during any one sale and, of these, only a portion would be drilled and result in subsequent production. Each lease sale, and all activities associated with it, was considered a proposed action for analysis of impacts on listed species. The average life of a lease is about 35 years, beginning in the year of the lease sale with exploration and subsequent development, production, and final abandonment and removal activities. During this span of time, all impacts would occur from operations in a leased block. Other non-OCS activities, such as state coastal oil production, development of coastal barriers, tankering of imported oil and commercial fishing not under the purview of the MMS, are included as activities in this biological opinion only with respect to cumulative impacts on listed species.

Lease Sale 184 is presumed to be typical, and impacts are predicted based upon historical trends. As indicated in the EA, approximately 13 to 18 percent of the total sales in the Federal OCS Program from prior, proposed and future sales is derived from the WPA. This represents a total reserve/resource production of 1.485 to 2.735 billion barrels of oil and 37.780 to 54.225 trillion cubic feet of gas. These are the low and high estimates of recoverable reserves anticipated which would yield a range of impacts depending upon the amount recovered.

The EIS reports that no significant impacts on sensitive coastal environments such as wetlands,

and barrier beaches and associated dunes are expected with the projection of 0-1 new pipeline landfalls in support of leasing in the WPA. This number of landfall(s) represents one-third of the new OCS pipelines projected to enter state waters that will tie into existing pipeline systems. Projecting fewer new landfalls while reducing potential impact to sensitive coastal environments by using nonintrusive installation methods will significantly reduce adverse impact to these sensitive coastal areas. No other infrastructure is projected to be built on such areas; however, newly leased tracts would contribute to the continued use of existing facilities.

The MMS is currently addressing the petroleum industry's proposed use of floating production, storage and offloading (FPSO) systems in the deepwater areas of the Gulfwide OCS Program (OCS Program). Major issues being evaluated include offshore storage of large volumes of oil in FPSOs and increased risk of spills associated with the shuttle tanker concept of transporting oil originating from the OCS. Concern regarding impacts to sensitive offshore resources associated with deepwater operations and the use of FPSOs is warranted, and such activities are being addressed by the MMS accordingly, including mitigative measures to establish adequate buffer zones around deepwater production sites. This opinion does not address MMS approval of any FPSO system. The Service will revise this opinion, if necessary, to address the additional impacts of this system when and if a request is made to install one in the WPA.

Although large oil spills associated with OCS-related activities in the WPA are low probability events, such a spill from an offshore production platform or pipeline; or a spill from an onshore pipeline, barge or support facility could likely result in significant environmental impacts to listed species and/or critical habitat along the Texas coast. Another significant impact to listed species could occur as the result of building or expanding coastal infrastructure to support the projected expansion of OCS offshore operations in the WPA. OCS-related infrastructures situated shore side include, but are not limited to, service bases, helicopter hubs, construction facilities, oil refineries and gas processing plants, coastal pipelines, terminals, disposal and storage facilities, and navigation channels. The Service believes the effects of OCS-related activities on listed species should focus primarily on spills reaching or originating on shore and infrastructure growth in support of the OCS Program.

Impact probabilities increase significantly when the analysis is broadened to consider the long-term OCS Program, presented as low and high estimates of total reserve/resource production (10.81 to 15.225 billion barrels of oil and 122.23 to 170.41 trillion cubic feet of gas) beginning with the leasing of a tract, during which past, proposed and future lease sales lead to recovery of resource estimates. The impact of oil spills and infrastructure growth can be low for a single lease sale, but very significant for the OCS Program as a whole. There will be many opportunities to evaluate OCS Program-wide impacts on listed species during future consultations when better information is available on the location of all resource estimates and consequential impacts on listed species can be more accurately predicted.

Operational discharges such as produced water, drilling muds and cuttings are regulated by the

U.S. Environmental Protection Agency (USEPA) through the National Pollutant Discharge Elimination System (NPDES) Program. All owners and operators of oil handling, storage or transportation facilities located seaward of the coastline must submit an Oil Spill Response Plan (OSRP) to the MMS for approval. Owners or operators of offshore pipelines, which carry by far the largest volume of oil, condensate and other wet product (< 1 percent of oil is moved onshore in barges), are required to operate pipelines in compliance with the approved plan. All OSRPs are reviewed and updated every two years or otherwise revised when circumstances (spills with significant impacts, change of owners, etc.) warrant. New pipeline rights-of-way that go ashore require an environmental impact analysis before approval. In the absence of swift and effective action by the responsible party for a spill, the U.S. Coast Guard (USCG) will initiate action pursuant to the Oil Pollution Act of 1990 (OPA or OPA 90) to control and clean up a spill offshore under area plans which have been developed for this contingency.

For onshore operations supporting the OCS Program in the State of Texas, the Oil Spill Response Act of 1991 (OSPRA 91) was enacted. This state legislation designated the Texas General Land Office (TGLO) as the lead state agency for oil spill response and authority to regulate oil spill response planning through the approval of facility and vessel response plans. The TGLO and the USCG are empowered by their respective state and federal oil spill legislation to act to reduce impacts when necessary and appropriate.

II. Status of the Species/Critical Habitat

The red wolf *Canis rufus*, although originally listed as endangered in Texas, no longer occurs there in the wild. The Arctic peregrine falcon *Falco peregrinus tundrius* and American peregrine falcon *Falco peregrinus anatum*, birds of the Texas coastal prairie, have recovered sufficiently to be delisted for purposes of Section 7. The ten species below occur in Texas coastal counties, but are not likely to be affected by the proposed action. The bald eagle is classified as threatened while the other species are listed as endangered.

Aplomado falcon *Falco femoralis*
 Attwater's greater prairie-chicken *Tympanuchus cupido attwateri*
 red-cockaded woodpecker *Picoides borealis*
 black lace cactus *Echinocereus reichenbachii var. alberti*
 Slender-rush pea *Hoffmannseggia tenella*
 Texas prairie dawn *Hymenoxys texana*
 South Texas ambrosia *Ambrosia Cheiranthifolia*
 Bald Eagle *Haliaeetus leucocephalus*
 Ocelot *Felis pardalis*
 Jaguarundi *Felis yagouaroundi cacomitli*

The following listed species are found along the shores of beaches and bays of the Texas Gulf coast and may be affected by the OCS leasing program in the WPA. Appropriate information on

the species' life history, its habitat and distribution, and other data on factors necessary to its survival is included to provide background for analyses of impacts. This analysis documents the effects of past human and natural activities or events that have led to the current status of the species.

Listed Birds

Piping Plover *Charadrius melodus*

The piping plover is listed as endangered in the Great Lakes States and as threatened in the remainder of its range, including Texas. This species has three discrete breeding areas in North America: the Northern Great Plains, the Great Lakes and the Atlantic coast. The first two breeding populations use the Gulf coast as an extended wintering area which includes virtually every month of the year with greatest occurrence between August and May. Wintering populations of piping plovers occur in coastal areas of the United States (U.S.) from North Carolina to Texas, and along the coast of Mexico. Census results of wintering piping plovers determined that 89 percent were found on the Gulf coast (Haig and Plissner 1993. Plissner and Haig 1997). Preliminary information indicates that Texas is the most important wintering area.

On the mid and upper coasts of Texas, the sand flats found along inland bay passes and coastal beaches provide the principal habitat for plovers. On the lower coast, the passes are much less important and the plover uses the extensive sand flats of the Laguna Madre (notably the algal flats of the lower Laguna Madre) where it feeds on surface and infaunal invertebrates, as well as coastal beach areas. While passes through barrier islands tend to concentrate the birds which use them, the extensive flats on the lower coast are used by loosely knotted flocks with little territoriality, suggesting that food and/or space is not a problem affecting behavioral biology there. At other beaches and bayshores of Texas barrier islands, individual plovers can be found with some regularity.

Critical habitat has been designated along the Texas coast to provide sufficient habitat to support the piping plover at the population level and geographic distribution necessary for recovery of the species. These areas contain the essential physical and biological elements for the conservation of wintering piping plovers and physical features necessary for maintaining the natural processes that provide appropriate foraging, roosting and sheltering habitat components. Currently, there have been 37 critical habitat units designated along the Texas coast, extending from Bolivar Peninsula in Galveston County to the southern tip of the state in Cameron County.

Brown Pelican *Pelecanus occidentalis*

Brown pelican occur in tropical and subtropical waters of the Pacific and Atlantic oceans. In the U.S., eastern brown pelicans range from New Jersey south along the Atlantic coast of Florida and along the coast of the GOM from Florida to Mexico. Historic threats (pesticides and illegal

killing) to the brown pelican, which resulted in it being listed as endangered in 1970, have essentially been eliminated.

The increased reproductive success of the small population still living in Texas and a natural expansion of brown pelicans from Mexico lead to the increase in the number of brown pelicans nesting along the Gulf coast of Texas. The population is now relatively stable along the coast of Texas; however, this pelican is extremely susceptible to disturbance from island intruders or low-flying aircraft and will abandon nests when disturbances are frequent.

Nesting habitat of these colonial birds is found on small coastal islands in salt and brackish waters. Nests are constructed from available vegetation. The major food of the brown pelican is fish, including menhaden, mullet, sardines and pinfish. The brown pelican catches fish by plunge-diving in coastal waters. Nesting islands are often chosen near channels where shipping and shrimping operations make fish easily available to nesting pairs. These pelicans are rarely found away from saltwater and typically do not venture more than 20 miles out to sea. The timing of pelican breeding activity can vary from year to year, beginning as early as February 15 and ending as late as September 1.

In 2001, over 3300 pairs of brown pelicans nested in Texas. The major nesting colonies are located on Pelican Island in Nueces County, Sundown Island in Matagorda County, and Little Pelican Island in Galveston County. At times during the past six years, brown pelicans have also nested at Rollover Pass, Jigsaw Islands and North Deer Island in Galveston County; Alligator Point in Brazoria County; and Dressing Point Island in Matagorda County. This rapid expansion of the population has resulted in Service actions to delist the brown pelican in Texas and Louisiana.

Whooping Crane *Grus americana*

The wintering range of the entire reproducing wild population of the whooping crane is found along the Texas coast, including critical habitat in Aransas, Calhoun and Matagorda Counties within the Aransas National Wildlife Refuge and adjacent lands and waters. The whooping cranes nest in Wood Buffalo National Park in the Northwest Territories of Canada, migrating 2,500 miles twice annually. Fall migration begins in September. The birds migrate during the day and make regular stops to feed and rest, arriving on their wintering grounds sometime in November. Spring migration begins in early March and they reach the breeding grounds in May.

The size of the Aransas-Wood Buffalo population was estimated at 174 individuals in the spring of 2002. The decline in the population of whooping cranes was caused by the draining of wetlands, conversion of grasslands to agriculture and hunting. Only 15-16 cranes survived the winter of 1941-1942.

The whooping crane was listed as endangered in 1967 and critical habitat was designated in

1978. In recent years, as the population of whoopers has increased, there has been a tendency for some to defend smaller winter territories than in the past, which results in more whoopers per unit of area in the traditional use areas. Others, though, are wintering away from these areas. These birds wade fish for crabs and clams in tidal flats, shallow bays, and channels in and around the refuge. At present, the issue of greatest concern for the cranes while in Aransas is the flow of the freshwater inflows into whooping crane critical habitat. Data shows that the health and survival of the endangered whooping crane flock is directly related with freshwater inflows and blue crab populations. Inflows are needed to produce blue crabs that are the primary food for whooping cranes.

Three captive flocks produce cranes for reintroduction to the wild. These captive flocks are located at the International Crane Foundation (WI), Patuxent Wildlife Research Center (MD) and the Calgary Zoo (Canada). There were 114 whooping cranes in captivity as of March 2002. In February 1993, a flock of 14 captive-reared whooping cranes was introduced on the Kissimmee Prairie in Florida. Annual releases of captive-reared birds since that time have resulted in 103 whooping cranes in this non-migratory Florida flock. After a 100 year absence, migratory whooping cranes were reintroduced in the eastern flyway during 2002. There are currently five birds in this flock that wintered at Chassahowitzka NWR in Florida and recently returned to Necedah NWR in Wisconsin.

Listed Sea Turtles

The Service has responsibility for sea turtles when they come ashore to nest. The NMFS has jurisdiction for sea turtles in the marine environment. Even though sea turtles are wide ranging and have distributions outside the U.S., the Service believes that U.S. populations qualify for separate consideration under Section 7 of the Act.

The leatherback sea turtle *Dermochelys coriacea*, the green sea turtle *Chelonia mydas* and the hawksbill sea turtle *Eretmochelys imbricata* are all found in Texas coastal waters. There have been no confirmed sightings of leatherbacks coming ashore to nest on Texas beaches since 1930; however, 10 sightings of greens (1987 to present) and 1 sighting of a hawksbill (1999) are confirmed to have nested on Texas beaches in recent years. The endangered leatherback is the most pelagic and is normally found in the deeper waters of the GOM where it may undertake extensive migrations. The endangered hawksbill nests on scattered islands and beaches between 25 degrees North and South latitude including beaches in southeastern Florida, and the states of Campeche and Yucatan in Mexico. The hawksbill nests between June 1 and June 15 of each year. Young hawksbills are seen with some regularity in Texas waters since northern currents carry them from natal beaches in Mexico. They are normally found as adults in the U.S. only among the coral reefs of southern Florida and the Florida Keys. The green sea turtle is listed as threatened in all of its range except the waters of Florida and the Pacific coast of Mexico, where it is endangered. Known nesting sites include southern Florida beaches and scattered locations in Mexico. Juvenile green sea turtles can occasionally be found in south Texas bays and lagoons

where they feed on seagrasses and algae, often staying in one place for several months.

Loggerhead Sea Turtle

The loggerhead sea turtle *Caretta caretta* is threatened throughout its range along the southern Atlantic and Gulf coasts. Loggerheads are widely distributed and can be found several hundred miles out to sea or inshore in bays, channels and shallow marshes. Adults reach maturity in 25 to 30 years when their diet shifts somewhat from pelagic crabs, jellyfish and such, to nearshore benthic invertebrates. There are distinct nesting populations on the coasts of the Florida panhandle and the Yucatan Peninsula. Nests can also be found occasionally along other areas of the Gulf coast including the Chandeleur Islands in Louisiana, and North and South Padre Island in Texas. The loggerhead nests every 2 to 3 years from May to August, usually at nighttime. Sites selected for nesting are high energy, low profile beaches only a few feet above the water. Several clutches may be laid in a given season; clutch size is about 125 eggs.

Kemp's Ridley Sea Turtle

The Kemp's ridley sea turtle *Lepidochelys kempii* is the smallest and most endangered of the sea turtles. Adults reach maturity in about 10-15 years. Kemp's ridleys are found mostly in the GOM where they feed on pelagic foodstuffs, especially crabs. Except for sporadic nests in south Texas and at scattered locations on the Mexican Gulf coast, the largest concentration of this species nests on several miles of beach at the Playa del Rancho Nuevo in the state of Tamaulipas, Mexico; however, in recent years there have been increasing populations sighted to the north of that area and the south to Vera Cruz, Mexico. Nests are selected on well-developed dunes in remote areas adjacent to large marsh complexes or shallow embayments. They nest during the daytime, often in groups called 'arribadas.' Turtles nest annually from April to June and an individual may nest as many as three times a season. Clutch size averages around 100 eggs.

Since 1978, the Service has been involved in an international cooperative project designed to establish nesting sites for the Kemp's ridley in the U.S. Eggs were collected in Mexico from 1978 to 1988 and transported to Padre Island National Seashore for imprinting purposes. Hatchlings were released into the water and then immediately recaptured and raised in 'head start' facilities at Galveston, Texas, until they were mature enough to be released into the GOM. Turtles imprinted for Padre Island nesting sites are beginning to return there after 10 years, changing past belief that sexual maturity of the species took 15 years to develop. Since 1996, several nests have been found in south Texas indicating that adults have matured and are returning to the south Texas beaches to nest. In 2001, three nests were reported from Padre Island National Seashore. In 2002, there have been 18 records so far. From 1989 to 1993, eggs collected in Mexico were then transported to Padre Island National Seashore, and placed in incubation facilities to be released in Texas coastal waters.

III. Environmental Baseline

The environmental baseline for listed species includes a consideration of collective effects of past and ongoing human and natural factors leading to the current status of the species along the Texas coast where impacts would occur. The effects of WPA leasing, including both direct and indirect effects as well as other interrelated or interdependent actions, are then added to the baseline to determine possible jeopardy or take.

The Texas coast offers a wide variety of available habitat and suitable climate to many species of birds, including populations of resident and migratory species of coastal and marine birds. Much of the coastline, especially in the lower reaches of the state where critical habitat designations are most prevalent, provides important staging, wintering and breeding areas for the listed bird species addressed in this biological opinion. Sand beaches, and tidal flats and marshes found along the immediate coast and contiguous bays and estuaries are utilized by these, and other birds and animals for habitat and foraging where abundant communities of microinvertebrates, infauna and fishes occur during all seasons of the year. The ever increasing use by humans (both non-OCS and OCS-related activities) of coastal resources and land throughout the U. S., and the natural factors resulting from existing infrastructure, have contributed to the current status of listed species, their habitat and ecosystem within the WPA.

The GOM and the Texas coast are inhabited and utilized by sea turtles during their various life stages, spending most of their lives at sea and only coming ashore to nest. Of the five species known to inhabit these waters, the Kemp's ridley is the most predominant and occasionally uses the sandy beaches of south Texas as nesting habitat. Nesting activity has increased in recent years primarily due to conservation measures and the aforementioned 'head start' and imprinting programs.

For at least two decades, several factors have contributed to the decline of sea turtle populations along the Atlantic and Gulf coasts. Turtles have been victims of commercial over-utilization of eggs and turtle parts, incidental catches during commercial fishing operations, disturbance of nesting beaches by coastal housing, and the consequences of marine pollution and debris. The reproductive strategy of sea turtles involves producing large numbers of offspring to compensate for high natural mortality through the first several years of life; however, excessive exploitation of turtles has increased mortality beyond what can be compensated for through high natality. Therefore, activities that continue to affect the survivability of turtles on their remaining nesting beaches, particularly the high-density nesting beaches, will seriously reduce the ability of the Service to conserve sea turtles

There have been no documented occurrence of oiling of any listed species other than sea turtles while using beaches of the Texas coast. During the 1979 IXTOC spill incident, a total of 26 oiled birds and 7 oiled sea turtles were collected (Hooper, 1981). None of the birds collected were of a listed species (American peregrine falcon, brown pelican, whooping crane and bald eagle) at the time of this incident. No indirect effects to these listed bird species was documented as well. Of the sea turtles collected, only one was rehabilitated and released.

Therefore, the Service can conclude that spills related to the OCS leasing program in the WPA have not contributed in any identifiable way to the present status of the species considered in this opinion.

IV. Effects of the Action

Oil Contamination

Oil and gas production resulting from Lease Sale 184 in the WPA could potentially lead to marine-borne oil spills which could make landfall and cause direct impact to individuals or populations of listed species, and/or impact sensitive coastal environments and critical habitat used by listed species. The impact may be small when considering an individual lease sale, but could be significant when considering recovery of all anticipated resource estimates in the GOM. The MMS uses a trajectory model, called the Oil Spill Risk Analysis (OSRA) model, to calculate probability of spill impact to specified environmental resources. The OSRA modeling results are then analyzed to evaluate spill risk for low and high production rates from a typical OCS lease sale and overall OCS Program in the GOM. Only large spills $\geq 1,000$ bbl are considered in evaluating risk information for offshore spills, since smaller spills $< 1,000$ bbl have little likelihood of making landfall unless they occur in nearshore waters or at onshore facilities or pipelines supporting the OCS industry.

As evidenced by the OSRA modeling results presented in the EIS, a large spill $\geq 1,000$ bbl could likely result from OCS activities following a WPA lease sale and 1) there is a 5 to 8 percent chance that impact to Texas coastal waters and habitat used by sea turtles would likely be affected within 10 days following a spill event, and 2) there is a < 0.5 to 18 percent chance that various coastal bird habitats for all listed bird species of concern (piping plover, brown pelican and whooping crane) would be affected during the periods of known use and within 10 days for all species and habitats modeled.

According to the EIS, the MMS has concluded that of the few offshore spills ranging from > 50 to $< 1,000$ bbl resulting from leasing in the WPA, only a few will actually reach coastal waters, make landfall and pose a treat to nesting sea turtles. Of greater concern from an environmental standpoint, but low in probability of occurrence, are the large spills in offshore waters estimated to include one each of $\geq 1,000$ bbl and $\geq 10,000$ bbl in size over the life of the GOM leasing program. The EA does not specifically address spill probability regarding impacts to sea turtles other than a general summary by reference from the EIS that OCS activities could impact wildlife inhabiting coastal or marine environments with no reference of impact to nesting sea turtles on Texas beaches.

Potential impact from large offshore spills $\geq 1,000$ bbl to coastal bird populations is relevant to the presence of specific birds in coastal habitats at the time spill contact occurs, assuming the spill slick would persist long enough to enter coastal waters and impact the immediate shoreline

or sensitive coastal habitats. The OSRA model trajectory provides probabilities of occurrence as the result of proposed action in the WPA, assuming spill impact would occur in various coastal habitats during the period of use and within 10 days following a spill event. The probabilities of occurrence and contact within 10 days for listed bird species of concern include 3 to 6 percent in piping plover habitat, 4 to 7 percent in brown pelican habitat and <0.5 percent in whooping crane habitat. Most of the OCS-produced oil (>99 percent) resulting from a proposed action will be transported to shore based facilities. Of this oil, an estimated 70 percent is projected to be brought into Texas-based facilities in Galveston, Houston and Texas City. Undoubtedly, coastal birds and habitats in coastal waters of these areas are at greatest risk from coastal spills resulting from a proposed action in the WPA based on sheer volume. For production of all reserves in the GOM, there would be virtually a 100 percent chance that one or more large spills $\geq 1,000$ bbl would occur, an assumption furthered by the OSRA model results that over the life of leasing in the WPA, spills related to OCS operation could average in number from 473 to 910 occurring in offshore waters and 26 to 52 occurring in coastal waters. These estimated numbers of spill events equate to a very small probability of a spill reaching the Texas coastline per the OSRA model, and render most Texas counties at minimal risk (≤ 0.5 chance of spill contact). Five coastal counties in Texas, however, are at greater risk (1 to 8 chance of spill contact), with Matagorda County at the greatest risk of spill contact from a WPA proposed action.

Ultimately, historical spill records provide the database used to predict the number and severity of oil contamination in the WPA, and the GOM in general. Reported spills from MMS-regulated activities in Federal waters have resulted from OCS exploration, development and production operations, as well as pipeline operations related to the transport of OCS oil. Other OCS-related spills in the past involved barge and shuttle tanker spills events and blowouts. Although there have been a number of blowout events in the last 30 years, very few involved spilled oil, and of the volumes spilled, none exceeded 1,000 barrels (bbl) or posed a threat to coastal shorelines. Large spills of 1,000 bbl or greater of OCS-produced crude oil from offshore platforms and pipelines pose the greatest threat to the coastal shorelines because these hydrocarbons persist on the water for a long enough time to make landfall. Conversely, smaller spills tend to naturally dissipate in the environment (a process called weathering) more rapidly; are more easily abated using alternative cleanup methods such as dispersant application or in-situ burn; and do not pose a significant threat because they have little likelihood of making landfall. Since there have been no large spills from OCS platforms since 1980, the EIS is warranted in stating that there is a low-probability for such an event to occur from those offshore facilities. However, it is unfortunate that there have been eight crude oil spills $\geq 1,000$ bbl from offshore pipelines during the period 1985 to 1999, indicative of the fact that these type of spills pose the most serious threat to coastal environments from OCS-related activities. Future concerns regarding large spill events from OCS-related activities will likely evolve once FPSOs and shuttle tanker operations are established in the OCS Program.

Below is a description of the nature of the impact from oil contamination on listed birds and sea turtles:

Impacts to Birds

Piping Plover *Charadrius melodus*

The important habitats used by the piping plover are subject to heavy disturbance from recreational use, and are also susceptible to damage from oil spills. Although shorebirds have a tendency to avoid oiled beaches, this does not totally eliminate direct oiling of birds. In addition, an oil spill forces birds to use less desirable feeding areas until the cleanup is completed. There is also some evidence of long-term reduction of infaunal populations following an oil spill. This could lower the habitat quality of prime wintering sites for an undetermined period. Because the plover has such restricted requirements for wintering habitat, it is one of the species that could be most severely damaged by an oil spill, especially if long stretches of beach are oiled or a prime wintering area at one of the tidal passes is impacted.

Brown Pelican *Pelecanus occidentalis*

Pelicans are susceptible to spilled oil in several ways. As they dive for fish, their body can be coated with oil. This may contribute to direct mortality (King et al. 1979) or could result in reduced hatchability when oil is transferred from the feet and feathers of parents to the eggs. Even though island nesting sites in Texas are partially protected from the direct impact of an oil spill by barrier islands, the wide-ranging nature of the bird when foraging would amplify the possibility of nest contamination. Even very small amounts of certain crude and refined oils applied to the surface of eggs cause high embryonic mortality or morphological abnormalities in a variety of avian species (Albers 1982, King and Lefever 1979, Lewis and Malecki 1984, White et al. 1979). If a serious oil spill should occur near a nesting island during the peak of the reproductive season, it is possible that the entire population of the young of the year could be lost along with a large number of adults.

There is a reasonable probability that an oil spill from the proposed lease sale could enter the passes into Galveston Bay or Corpus Christi Bay and make landfall on the nesting islands for the brown pelican. There is, of course, no way to predict whether it would coincide with nesting or if it could be contained sufficiently to prevent any damage. Pelicans are sensitive to disturbance so preventative measures, such as dispersal noises or the use of booms and skimmer equipment, might have as much damage as the oil itself by disrupting the nesting process.

Whooping Crane *Grus americana*

Oiled waters in whooping crane habitats could pose a considerable threat if a spill occurred between November and late April when the whoopers are on their wintering grounds. As with brown pelican nesting sites, this wintering habitat is protected to some extent from oil spills in the open Gulf by barrier islands, but the loss of even a relatively small portion of the Aransas-

Wood Buffalo population could cause serious delays in the recovery of the species.

Impacts to Sea Turtles

Oil spills impacting the nesting beaches of Kemp's ridleys or the other sea turtle species of concern could have significant impacts depending upon the amount of weathering the oil has undergone, the height of deposition on the beach, and the stage of nesting (Fritts and McGehee 1982). Impacts will be different depending upon whether the oil impacts the beach before nesting, during nest preparation, or later during incubation and migration of hatchlings to the sea. Studies of the effects of residual petroleum on the development and survival of marine turtle embryos are inconclusive. These studies indicate that oil remaining on the beach approximately one year after a spill did not cause significant mortality to sea turtle embryos, most likely because oil-coated sand is displaced when nests are excavated for egg-laying. On the other hand, the impacts of a fresh oil spill on nesting beaches would be significant if oil coated the beaches during the nesting season. Fresh crude oil deposited on sand above a nest can cause extensive mortality to incubating sea turtle eggs. Fritz and McGehee (1982) noted that sea turtle eggs were damaged by contact with weathered oil released from the *Ixtoc* spill in 1979, which oiled the Rancho Nuevo beaches.

Oil collecting at beaches through which nesting adults or retreating hatchlings must pass can also affect the survivability of turtles in several ways. Damage can occur by toxic ingestion with blockage of the digestive tract or internal and external inflammatory responses including infection or poisoning. Most impacts are believed to be sublethal, but little is known about the impacts of chronically ingested oil accumulating in organs. There is little doubt that long-term chronic impacts will affect the survivability of turtles, both young and old. More definitive information is needed to assess the impacts of oiling on sea turtle nesting beaches; unfortunately, this must wait until an oiling incident again occurs.

It has been suggested that the release of some chemical substance guides the turtle on its return from the sea to the natal beach for nesting (Lutz et al. 1986). Oil on a potential nesting beach could interfere with these chemical guides and confuse potential nesters or cause them to move to less desirable sites or not nest at all.

There is extremely little chance that a spill from a pipeline or well site would impact a nesting beach in south Texas or the states of Tamaulipas and Vera Cruz in Mexico. Combined probabilities give the same result. There is little reason to believe that spills from activities associated with the proposed lease sale would have a measurable impact on nesting sea turtles or incubating young.

Growth of Coastal Infrastructure

There are 16 refineries and 26 gas processing plants now on the Texas coast. No new refineries

are expected to be built, but several new gas processing plants can be expected to handle deepwater production. Other types of service and support facilities should be adequate to handle future production with little additional need for habitat displacement. No new coastal infrastructure is projected to be built on barrier beaches and dunes. The one notable exception is an increase of pipeline landfalls and miles of onshore pipelines, along with an increase in pipeline shore facilities. This infrastructure is expected to double during the life of the OCS Program. Pipeline landfalls are usually built using non-intrusive methods which would not significantly impact barrier beaches. Although many onshore pipelines and onshore facilities do not require Federal approval, the Service has the opportunity to identify impacts to listed species through the Section 10 take permit program which requires the development of a habitat conservation plan to reduce losses. This would be an especially important mechanism where MMS has no regulatory authority and no wetland habitat is involved which would be reviewed under the Department of Army permit program.

V. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this opinion because they require additional consultation at the time they are proposed.

Most offshore spills from non-OCS related activities are the result of vessel accidents involving import/export tankers, and barge and tank vessels carrying foreign or state-produced crude oil. Most large coastal spills $\geq 1,000$ bbl are terminal-related events involving coastal barging operations. The smaller non-OCS spill events involving offshore and coastal spills are the result of cargo transfer mishaps, which include lightering of oil in the GOM. Of these potential non-OCS related spill events, large tanker spills resulting from collisions and groundings have the greatest chance of reaching and impacting sensitive coastal habitat at beaches and islands along the Texas coast with devastating results. Not only are listed species of birds at risk, these events also contribute to much of the oiling of maritime sea turtles which affects successful nesting by killing or disabling mature adults. This is important because turtles take so long to reach maturity and the death of a mature turtle is much more serious than the death of hatchlings and 2-3 year old individuals.

Inshore spill events have the greatest likelihood of impacting coastal estuary and bay shorelines habitats used by plovers or nesting brown pelicans. Large inshore spills would occur primarily from tankers and barges while at dock or during intra-coastal transport of crude oil and petroleum products in barges and pipelines. Upon review of USCG historical spill data, the MMS reported in the EIS that 32 percent of all non-OCS coastal spills occur in state waters 0-3 miles offshore (includes Texas) and 64 percent occur in inland waters.

The impact of coastal development from non-OCS related activities on piping plover may be

contributing to a decline in populations of the species. Coastal areas lost to commercial, residential and recreational developments usually attract predators and often displace or disrupt breeding habitat. Coastal development along Texas shorelines, especially in the lower reaches of the state where designated critical habitats are most prevalent, can significantly impact wintering plovers that require quality foraging and roosting habitat to insure adequate numbers of breeding populations survive and migrate back to breeding areas and successfully nest. To lessen these impacts, development activities in wetlands are closely regulated through the Department of Army permitting process, and proposed activities in coastal habitat must be reviewed under Section 7 and 9 of the Act, as appropriate.

The impact of commercial shrimping in taking maritime turtles is well known. This poses the greatest threat to recovery of turtles and should be the major focus of impact-reducing efforts. Turtles must survive in the open sea for long periods of time before they mature and return to natal beaches. Oiling of mature adults when they come ashore to nest is far less consequential than drowning of adults in trawls.

VI. Conclusion

The occurrence of spills is fundamentally a matter of probability and no one can accurately predict the amount of oil that will be produced, or the size or likelihood of a spill that would occur during the production life of either an individual lease sale or the entire OCS Program in the GOM. Statistics on producing acreage and amount of oil produced over the last 20 years indicate that oil production on the OCS has been steadily increasing (about 6 million acres leased; producing about 300 million barrels of crude each year). This trend is expected to continue at a rate similar to or slightly higher than past production. Listed birds and sea turtles use the shores and islands of the Texas coast at certain times of the year so the severity of an oil spill would depend upon coincidence between the contact of a spill with habitat and its use at that time. It is possible that even one spill could be devastating if the probability is high enough, and if the spill happens at a time and location so as to harm a number of individuals. The speed and effectiveness with which these spills are contained and cleaned up will determine the extent of the impact. There have been few instances when a spill is so imminent, the weather too inclement, or the volume of spilled oil too large to implement meaningful spill control measures presently in place.

After reviewing the status of listed species along the Texas coast and the effects of the proposed lease sale, including interdependent and interrelated activities cumulative impacts, it is the Service's biological opinion that oil and gas activities associated with this lease sale are not likely to jeopardize the continued existence of the piping plover, brown pelican, whooping crane and sea turtles which nest on Texas shores. Critical habitats have been designated for the piping plovers along the Texas coast, and whooping crane in and around the Aransas National Wildlife Refuge; however, no destruction or adverse modification of critical habitat in those geographic areas is anticipated.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the MMS so that they become binding conditions of any lease, as appropriate, for the exemption in Section 7(o)(2) to apply. The MMS has a continuing duty to regulate the activity covered by this incidental take statement. If the MMS (1) fails to assume and implement the terms and conditions or (2) fails to require the lessors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of Section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the MMS must report the progress of the action and its impact on listed species to the Service as specified in the incidental take statement. [50 CFR §402.14(I)(3)]

The Service does not anticipate that activities associated with the proposed lease sale will incidentally take any of the listed species considered in this consultation provided that shore or island habitat of listed species is properly identified in spill response plans, and quick, effective action is taken to protect these areas and the species using them from a spill. To achieve this, the Service recommends:

1. The MMS should ensure that oil spill response planning to meet the requirements of the agency identify important habitats used by listed species, including designated critical habitat. The strategic placement of spill cleanup equipment should only be used by personnel trained in non-intrusive cleanup techniques on beach and bay shores.
2. The MMS should ensure that oil spill response planning prepared to meet the requirements of the agency identify the designated critical habitat used by the piping plover. The Service also recommends the MMS to make yearly inquiries regarding any changes in piping plover critical habitat designations.
3. To avoid disturbance of brown pelican nesting activities, the Service recommends all

aircraft, both helicopter and fixed-wing, working on activities of the MMS program be required to avoid flying lower than 1,000 feet above ground level or within a 2,000-foot perimeter around an island containing a nesting colony. Currently, pelicans are nesting on Pelican Island in Corpus Christi Bay, Sundown Island in Matagorda Bay, and Little Pelican Island in Galveston Bay. The Service also recommends the MMS to make yearly inquiries regarding any changes in brown pelican nesting locations and designated habitats.

4. To avoid disturbing wintering whooping cranes between October 15 and April 15, all aircraft should fly above 1,000 feet over Aransas National Wildlife Refuge; whooping crane critical habitat in Aransas, Calhoun and Refugio Counties; Blackjack Peninsula; the northern half of San Jose Island; and the southern two-thirds of Matagorda Island.
5. The MMS should ensure that oil spill response planning prepared to meet the requirements of the agency identify specific locations on nesting beaches utilized by sea turtles and provisions for the appropriate removal of eggs from beaches that are imminently expected to receive spilled oil. The eggs should be incubated and the young turtles released in an uncontaminated area. The plan should also name qualified and permitted rehabilitators to handle oiled and/or stranded sea turtles.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. The Service has no conservation recommendations to make at this time.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the MMS's request regarding the proposed Western Gulf of Mexico Lease Sale 184. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if:

1. the amount or extent of incidental take is exceeded;
2. new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;
3. the agency action is subsequently modified in a manner that causes an effect to the

listed species or critical habitat not considered in this opinion; or

4. a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. The Service appreciates the opportunity to provide input to promote conservation of threatened and endangered species. If further assistance is needed, please contact Fred Werner or Ron Brinkley at 281/286-8282.

/s/ Frederick T. Werner

cc:

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