WORK PLAN FOR DETERMINING OILING RATES AND MORTALITY OF WINTERING OPEN-WATER WATERBIRDS FROM THE DEEPWATER HORIZON (MISSISSIPPI CANYON 252) OIL SPILL (BIRD STUDY 12)

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For the:

Open-water Waterbird Technical Group

On behalf of the Deepwater Horizon / Mississippi Canyon 252 Oil Spill Trustees

INTRODUCTION

This plan will collect data which may be used to evaluate the potential for injury from the Deepwater Horizon / Mississippi Canyon 252 (hereafter, MC 252) oil spill to open-water, wintering waterbirds (birds that spend the winter months in generally open waters within 40 km of the Gulf of Mexico shoreline).

This plan focuses on three target species that are relatively common and widespread in the Gulf during the winter: American white pelican (*Pelecanus erythrorhynchos*), which tends to inhabit coastal waters; common loon (*Gavia immer*), which tends to inhabit nearshore waters; and northern gannet (*Morus bassanus*), which tends to inhabit nearshore and offshore waters. These species typically do not arrive in the Gulf of Mexico in large numbers until about December. The habitats occupied by these species include areas where oil was still in the environment as of early February 2011 and from where oil may be mobilized, presenting a hazard to the target species. White pelicans have been observed oiled in the Gulf off Louisiana and Alabama. Gannets and loons can be highly mobile within the Gulf of Mexico[1] and have not been comprehensively evaluated via other Bird Plans. These species may encounter oil in open water in one area of the Gulf but may then inhabit areas where natural resource damage assessment bird observations are no longer being made.

The oiling observation field work described in this study plan is presented here in two phases for decision-making purposes. Phase 1 consists of the oiling observation field work to be conducted within the first 30 days after execution of the Principal Investigator's contract or contractual Notice to Proceed, whichever is sooner. Phase 2 consists of the remainder of the oiling observation field work described in this study plan. Before the implementation of Phase 2 can begin, the Trustees will discuss the results of Phase 1. If the results of Phase 1 indicate to the Trustees that additional data collection will materially reduce natural resource injury assessment uncertainty, the Trustees may proceed to Phase II and/or may develop additional data collection efforts not specifically agreed to under this plan. In the event that the Trustees have a difference of opinion as to the utility of additional data collection, each reserves the right to pursue independent additional data collection.

PLAN OBJECTIVES:

1. Estimate the proportion of target species populations that are oiled within the Gulf of Mexico study area through air, shore, and boat-based surveys

[1] For example, a juvenile gannet observed offshore of the Gulf Shores, Alabama area in November 2010 was observed 20 days later in the vicinity of Galveston Island, Texas (http://www.seaturtle.org/tracking/index.shtml?tag_id=40256&full=1). Also see Kenow et al. (2009) for information on the potential winter home ranges of common loons, which could span over 1,000 square km.

2. Collect information on target species mortality occurring within the study area by relying on the dead bird surveys that will be performed under the Waterfowl study (Bird Study #10) but adding additional dead bird surveys or increasing frequency of surveys if necessary to adequately address the WOWW target species.

Details of the proposed study plan for each objective are presented below.

STUDY AREA

The study area is the Gulf of Mexico and adjoining major lagoons and bays from Terrebonne Bay, Louisiana, to Apalachicola, Florida – from nearshore habitats to areas up to 40 km offshore (Figure 1). Habitats to be sampled include coastal beaches, inshore and offshore marine waters, open water around barrier islands and oil platforms, and other areas where aggregations of wintering open-water waterbirds may be found. Areas of target species aggregations in the vicinity of the delta/mouth of the Mississippi River will be surveyed in addition to other concentration areas within the larger study area. Areas that have been identified as moderately or heavily oiled on SCAT maps or according to other reliable sources of information will be included as surveys sites as well as areas that have been identified as not oiled, trace oiled, very lightly oiled, and lightly oiled.

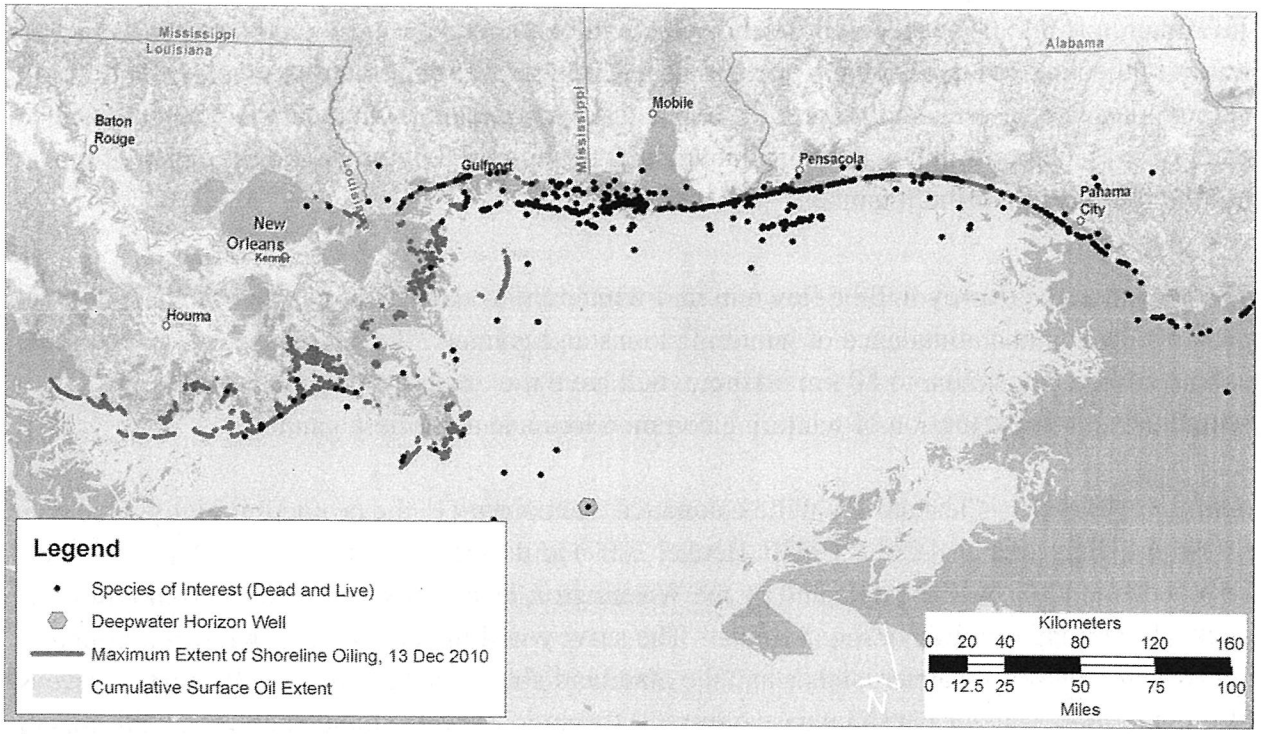

Figure 1. Study area for assessment of potential injury to wintering open-water waterbirds includes most of the area where shoreline oiling was most extensive and where most recoveries of live and dead oiled common loon and northern gannet have occurred.

STUDY DESIGN

Objective 1: Estimate the proportion of target species populations that are oiled within the Gulf of Mexico Study Area.

The objective will be accomplished by estimating the sizes of the populations of the target species in the study area via two aerial surveys, and implementing foot-based and boat-based observations of the target species to estimate proportions visibly oiled.

1a. Aerial Surveys

To estimate populations and spatial distribution of the target species in coastal, nearshore and offshore areas of the Gulf of Mexico, two sets of aerial surveys will be conducted within an area between Terrebonne Bay, LA, and Apalachicola, FL, in estuarine, nearshore, and open waters. Both overflights are associated with the Phase 1 effort (i.e the first 30 days of field efforts).

The first survey, completed in mid-January 2011, covered from the coastline out to 5 km offshore. The primary purpose of this survey was to locate aggregations of target species. Information from this survey will be used to provide locations for beach- and boat-based survey crews (Objective 1b) to assess the occurrence and extent of oiling of target species. The first survey may also be sufficient to provide a population estimate of white pelican, which usually occupy bays, lagoons, and near-shore habitat, and provide initial population estimates of the common loon and northern gannet.

The second aerial survey will be flown in mid-winter (mid- to late-February 2011) during typical peak occupancy and abundance of wintering loons and gannets. This second survey, which will extend from the coastline to 40 km offshore, will have the objective of estimating peak populations and distribution of wintering common loons and northern gannets.

Sampling Methods -- The survey will be conducted according to the protocol initially developed by Briggs (Briggs et al. 1985a, 1985b, Henkel 2007) and used by the California Department of Fish and Game for baseline data and by the Washington Department of Wildlife to monitor sea ducks, loons, and seabirds in Puget Sound. The survey will include the following components: (1) coastal surveys of barrier islands and the mainland shore (January only); (2) coastal surveys of the interiors of major bays (January only); (3) "zigzag" surveys in the open water interiors of major bays (January and February); 4) zigzag surveys between the mainland and barrier islands in nearshore sounds (January and February) and; 5) zigzags extending from the coast to 5 km offshore (January) or 40 km offshore (February). Survey design is shown in Table 1 and Figures

2 and 3.

Table 1. Type, pattern, and geographic scope of aerial surveys of wintering open-water waterbirds as proposed (data does not reflect the actual survey length data from the completed January 2011 flight).

Component	Length	Jan. Survey	Feb. Survey*	Color on Map
Coastal – barrier islands and mainland shore	1531 km	x		Pink
Coastal - bays	370 km	x		Orange
Zigzag, bay interiors	468 km	x	x	Red
Zigzag, nearshore sounds	707 km	x	x	Blue
5 km offshore zigzags	992 km	x		Violet
40 km offshore zigzags	1911 km		x	Violet
TOTALS		**4068 km**	**3086 km**	

Data Collection. – Surveys will be carried out from a high-wing twin engine aircraft (Partenavia Observer) flying at about 100 knots (kt) and 200' above sea level (ASL). Observers will sit on either side of the aircraft, recording all birds within a 75 m strip on each side. Along the coastline, the nearshore observer will record all birds that are visible on beaches regardless of their width. During the 40 km offshore zigzags, the plane will, consistent with FAA regulations, approach to within 152 m (consistent with FAA regulations) of offshore structures that are within approximately 1 km of the survey trackline to determine whether waterbirds congregate near these structures.

Basic information recorded for each individual or flock will include species, number, behavior (e.g., flying, resting, incessant flapping, or preening), time, and location. Observations of oil on the water or on wildlife will be noted. Data will be recorded directly into a GPS equipped computer operated by the navigator/data logger sitting in the front of the aircraft. Data will also be recorded on audio recorders to provide a data backup and additional detail as required.

Survey Length/ Frequency/Timing. —The January and February surveys will each be conducted over a period of approximately 5 days.

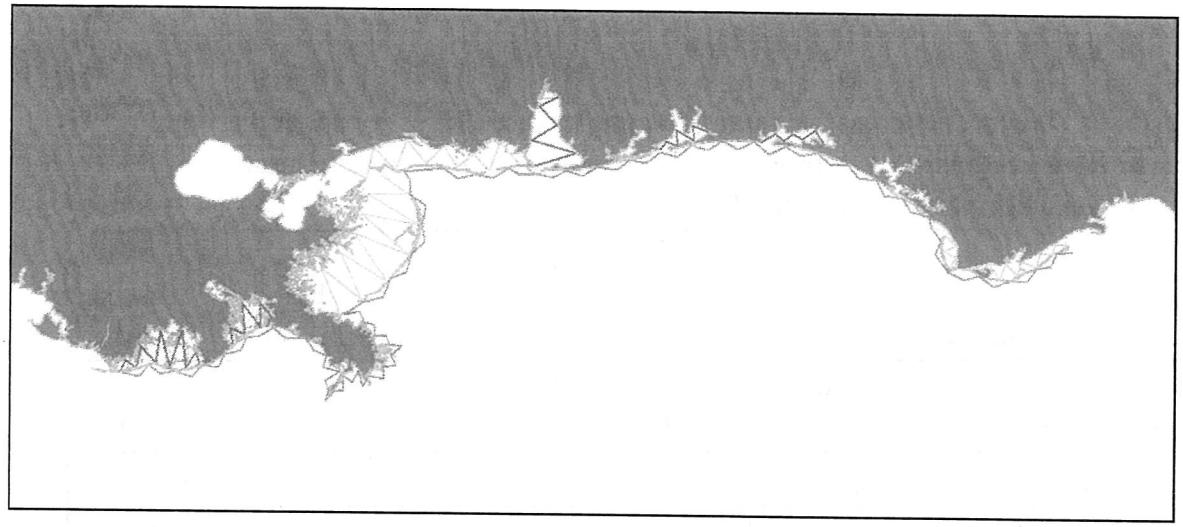

Figure 2. Proposed pattern and geographic scope of January aerial survey of open-water waterbirds (not the actual flight lines flown). The survey zone covers wintering open-water waterbirds that occupy major bays, lagoons, and ocean from shoreline to 5 km offshore.

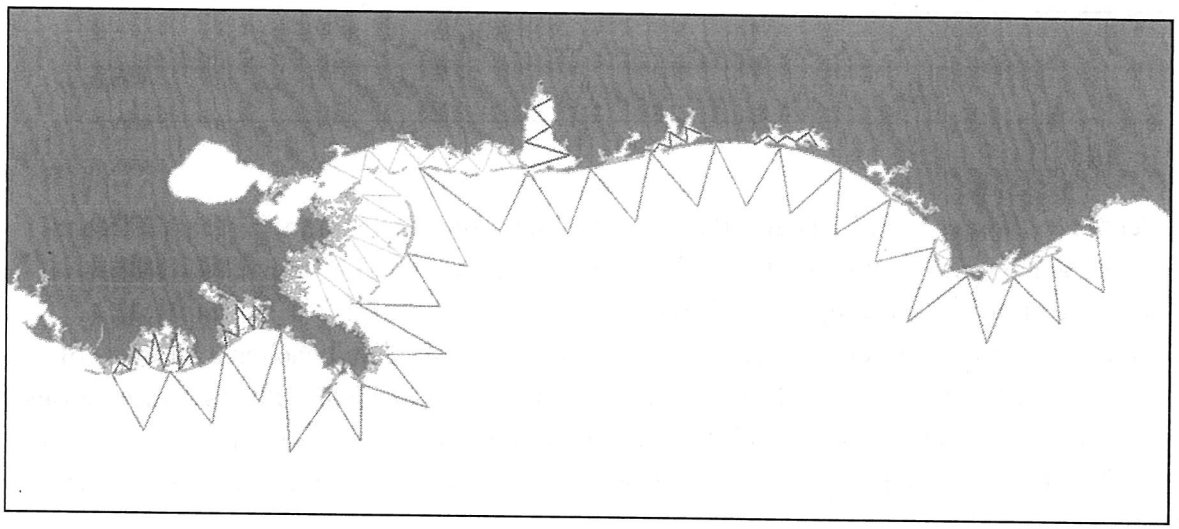

Figure 3. Pattern and geographic scope of February aerial survey of open-water waterbirds. Emphasis is placed on the nearshore region including major bays, lagoons, and ocean to 40 km offshore.

1b. Estimate the proportion of birds oiled to various degrees at representative areas throughout the study area.

Within this Objective, there are two general categories of field work with somewhat different study designs. The study approaches for white pelicans and common loons are generally similar, performing oiling observations within a grid system, while the study approach for northern gannets will use boat-based strip transects.

1.b.1. White Pelicans and Common Loons

General Sampling Design. —Results from aerial surveys and other reliable and relevant sources of information will be used to support the selection of boat- and foot-based survey areas. Similar to Colonial Waterbirds – Study #4, Area Contingency Plan (ACP) grids will be used to geographically define daily survey events for common loons and American white pelicans. As boat- and land-based surveys are conducted, the information obtained during those surveys regarding the locations of target species aggregations can be used to inform study site selection. Information regarding habitat oiling will also be considered.

General Data Collection. — Both boat- and foot-based shoreline surveys will be conducted to evaluate the oiling level of individual water birds. Observations of birds at sampling sites will be made with 10 x 42 binoculars and/or with a 20–60x spotting scope. Only birds that can be observed well enough to be confidently classified as being visibly oiled or not visibly oiled will be included in the sample; that is, all birds in a flock will not be counted, the number of visibly-oiled birds recorded, and all others assumed to be unoiled. Each bird that is clearly observed will be assigned to 1 of 5 visible oiling categories based on the proportion of oil covering the bird; where practical, field teams will work cooperatively to reach consensus on the oiling status of a bird while making oiling observations in the field.

Each observation will be geo-referenced using GPS coordinates. Observations of any oiled birds will be photographed with date-time-location stamps to confirm visible oiling observations. A laser range-finder will be used to quantify the distance between the observer and group of birds being observed. Measurements will not be needed for every bird, but may be used to help calibrate 10-m categories for observation events.

General Data Selection — Oiling rate observations will be organized within ACP grids (Figure 4) that contain congregational areas for the target species as revealed by the WOWW aerial surveys, information collected during the implementation of the WOWW study, and other sources local information, such as Christmas Bird Counts, eBird, and

Louisiana's Winter Bird Atlas Study. Field crews will use aerial survey data to target ACP grids with high concentrations of white pelicans and common loons. ACP grid cells that are white pelican and loon habitat and not initially identified by aerial surveys as being high concentration areas for white pelicans and loons will be surveyed periodically throughout the study to determine if target species' distributions have shifted. The choice of observation locations will depend upon access, densities based on aerial and subsequent survey activities, land owner permission, and other factors, and may change as seasonal species distributions change. For Phase 1 of the study, sampling sites will focus on target species concentration areas where they co-occur with areas that have been documented as moderately or heavily oiled.

White Pelicans

White pelicans will be observed primarily using boat-based observations of the nearshore habitats, such as bays and coves, as well as along barrier islands, primarily in Louisiana and Mississippi. For white pelicans, surveys will be conducted on one dedicated vessel (e.g., a Salt Grass Boat), targeting areas where concentrations of white pelicans are greatest based on the January aerial survey. The vessel will carry a team of at least two participants. The roles of the individual field crew members will be assigned in the field and consist of at least one member observing the oiling status of birds and one member acting as the data recorder. Two observers for oiling status are preferred so that the team can appropriately evaluate flocks of white pelicans, which can be large. The duty of photographer may be assumed by one of the field team members. A representative for the Louisiana Trustee may join the field crews, particularly those working in Louisiana, to participate in the field activities.

The white pelican team will survey at least 25% of all ACP grid cells in the study region from Terrebonne Parrish, Louisiana, to Mobile Bay, Alabama, every five days, given suitable viewing conditions. However, during Phase 1, priority will be given to completing surveys first in areas of target species concentration areas where they co-occur with areas that have been documented as moderately or heavily oiled.

Common Loons

Common loon surveys will be conducted by two observation teams primarily from the shore, with some use of boats when needed. Some loon oiling rate data may be collected in coordination with white pelican and northern gannet surveys when gannet and pelican surveys overlap with loon habitat. Observers will use 20-60x spotting scopes to monitor individual loons until preening behaviors (usually occurring for 5-10 minutes every hour) provide ample view of the loon's white belly. Each loon observation team will consist of

an integrated team of two to four participants. The roles of the individual field crew members will be assigned in the field. Where practical, field teams will work cooperatively to reach consensus on the oiling status of a bird while making oiling observations in the field.

At least two well-qualified observers are needed at a time to assess oiling on loons because of the technique involved (i.e., an individual bird must be constantly monitored until it reveals its white belly, so two observers taking turns watching individual birds will ensure that the oiling observation is not lost by a single observer taking a break). Also, while one observer is watching a loon, the other observer may collect data on the oiling status of other species. One crew member will act as the data recorder. The duty of photographer may be shared among the crew members. A representative for the Louisiana Trustee may join the field crews, particularly those working in Louisiana, to participate in the field activities. The "BRI Lead" team member will oversee both loon teams to make sure that they are conducting the work in a standardized way, to help with areas where vehicle shuttles would facilitate moving between survey sites, and/or to retrieve and transport collected carcasses as needed. The "BRI Lead" will participate in approximately half of each loon field team's field effort.

The common loon teams will work together to survey at least 20% of the ACP grid cells from Terrebonne Parrish, Louisiana, to Mobile Bay, Alabama, and at least 10% of the ACP grid cells in the area between Mobile Bay and Apalachicola, Florida, every five days. However, during Phase 1, priority will be given to completing surveys first in areas of target species concentration areas where they co-occur with areas that have been documented as moderately or heavily oiled.

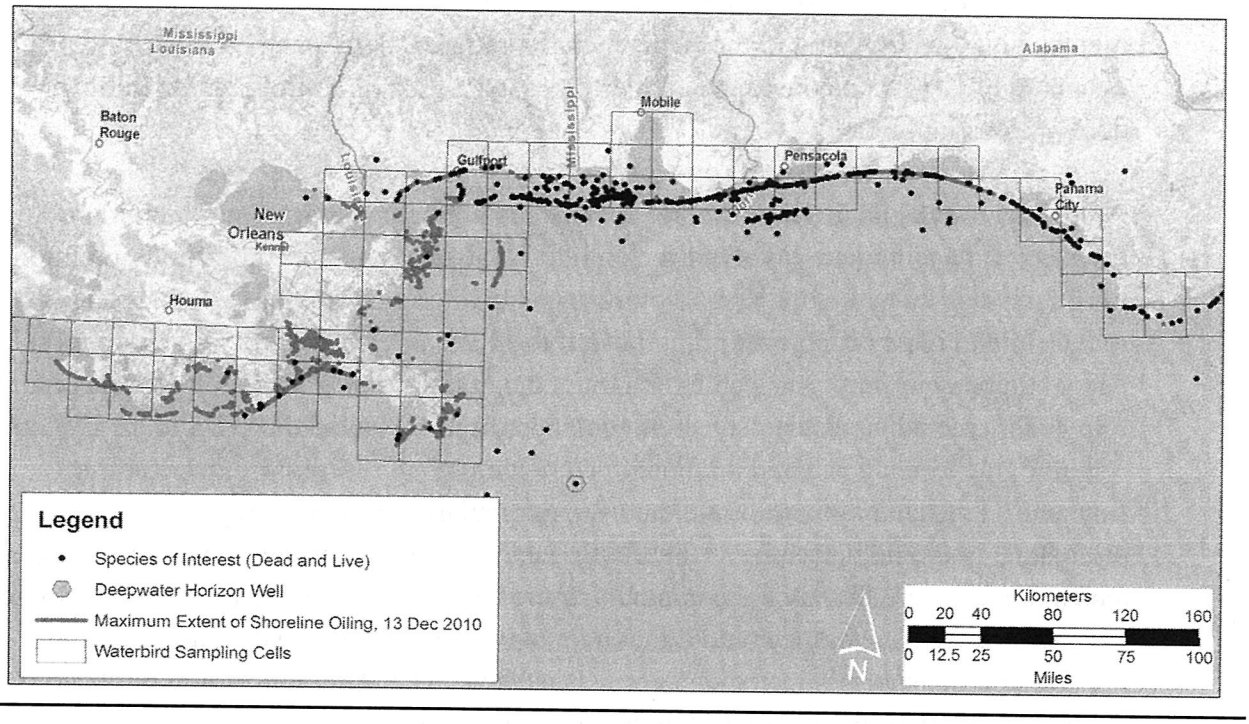

Figure 4. Study area and U.S. Coast Guard Area Contingency Plan grids. For grid cells that do not extend from the coast to at least 5 km offshore (e.g., two cells east of Pensacola), the grid system may be expanded based on the result of the aerial surveys to include all aggregations of target species that occur within 5 km of shore.

1.b.2. Northern Gannets

General Sampling Design - Surveys will be conducted on one to two dedicated vessels, with one based in the western half of the study area and one based in the eastern half of the study area. Surveys for gannets will not be based on ACP grids; rather, they will rely on transects. Transects will be spaced every 10 to 20 km, will begin at shore, will extend out to 40 km offshore, and will run either perpendicular to shore, parallel to a selected set of grid lines, or use a hybrid approach similar to what is shown in Figure 5. For Phase 1 of the study, transects will be primarily located in areas of high gannet concentrations that co-occur with areas that have been documented as moderately or heavily oiled by SCAT or other reliable sources of information.

When aggregations of foraging or loafing flocks of gannets are observed (>20 individuals) in the air or on the water, observers will determine, based on the gannet's general behavior, whether the aggregation appears likely to remain in place long enough to allow assessment of gannets for oiling rates. If so, strip transects would be paused so that the ship can move off transect and approach these aggregations of birds for oiling

assessment. Once this point count has been completed, the ship will return to the transect line and continue the strip transect methods.

Data Collection. – Observations will be conducted from an elevated viewing platform that provides an unobstructed view of the water. Gannets and other seabirds within a 90-degree bow-beam arc and within 300 m of one side of the ship will be recorded. Individuals observed within 100 m of the ship will be given the highest priority for determining oil exposure. Best efforts will be made to collect photographs of visibly oiled gannets and other oiled birds. Each ship will carry a team of at least two participants[2]. The roles of the individual field crew members will be assigned in the field and consist of two members, if possible, working together to observe the oiling status of birds and take photographs and one member acting as the data recorder. A representative for the Louisiana Trustee may join the field crews, particularly those working in Louisiana, to participate in the field activities. Field teams will work cooperatively to reach consensus on the oiling status of a bird while making oiling observations in the field.

Except where differences may be described in this Study Plan, all gannet strip transect work will be conducted using the protocols used in the Pelagic Bird Study (Bird Study #6). All sightings will be entered into an onboard laptop computer via 'dLog' or a similar tracking program. The transect route and sighting locations will be tracked using a GPS unit or the ship's navigation system. GPS waypoints for the position of the ship will also be taken for each sighting/recovery of an oiled carcass.

[2] Unlike the Pelagic NRDA Bird Study (#6), where extremely low densities of birds were expected to be seen at any one time, the density of gannets, when encountered, are expected to be high. Thus, more team participants are proposed for this study than in the previous pelagic surveys.

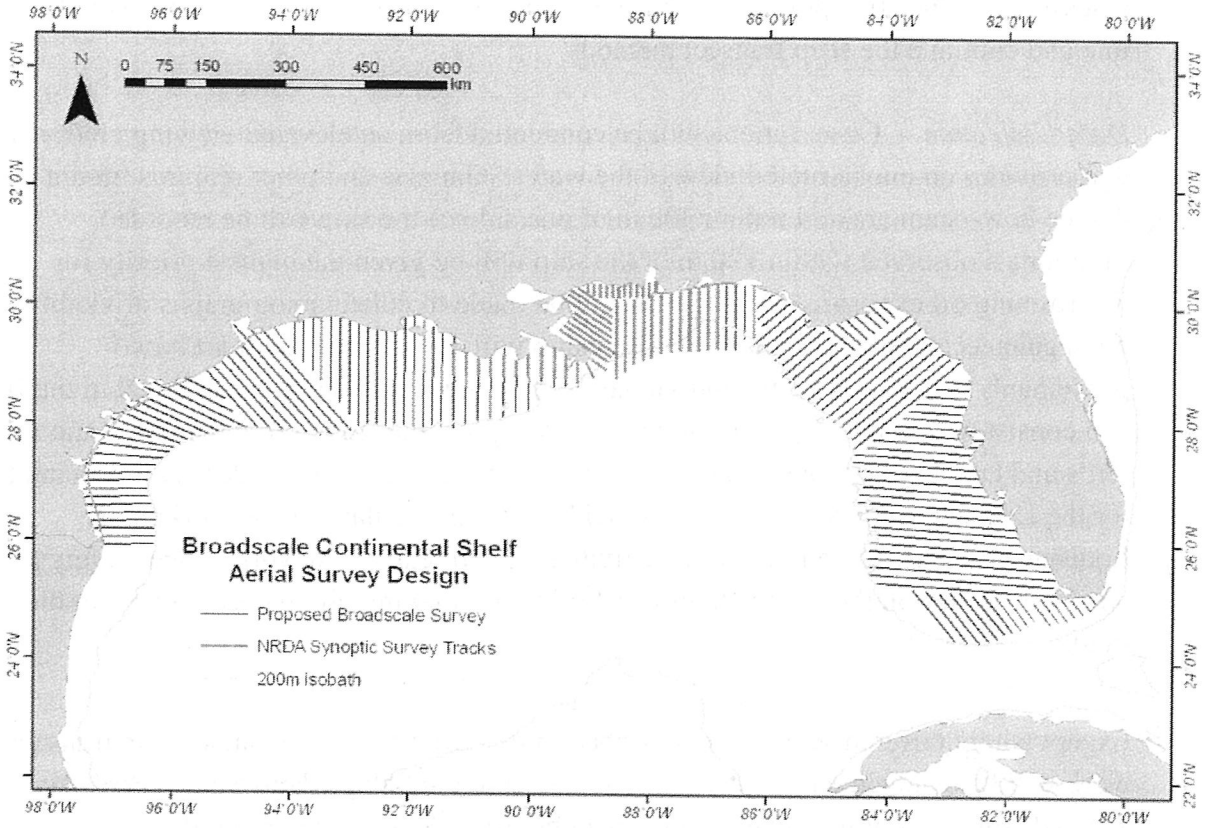

Figure 5. Example ship-based survey methodology that can be implemented as part of the northern gannet survey design.

Objective 2. Beached Bird Surveys

Beach segments of concern for this plan may overlap surveying under Waterfowl Study - #10 which may be implemented through late winter 2011 (The Waterfowl Study is being adaptively managed, and thus, the exact termination date has not been identified yet). Trustees will determine whether Beached Bird surveys in AL, MS, and FL should be conducted more frequently than every fourteen days, (as specified in the Waterfowl Plan), and whether Beached Bird surveys will continue beyond the termination of the Waterfowl field efforts for the purpose of additional data collection on the target species, based on recoveries of pelicans, loons, and gannets reported from waterfowl Beached Bird Surveys.

In addition to the Beached Bird Survey transects, the foot-based survey crews may perform Beached Bird Surveys during their oiling observation activities when feasible. Any time a field crew consisting of more than two members walks along a beach for purposes of obtaining oiling observations of the target species, GPS coordinates of the beginning and ending locations will be collected, and the team will conduct a Beached Bird Survey (just the dead bird activities) according to the SOPs used for Bird Study #1/1A. This practice will be employed especially if it

is apparent that the same sections of shoreline will be accessed and traversed more than once during the implementation of this Study Plan. This practice is limited to crews of more than two members, with the intention that two members of the team can concentrate on searching for dead birds (consistent with Beached Bird Survey protocols) while the third member can keep track of the target species to which the team is traveling for oiling observations. Any carcasses found will be handled according to the SOP for carcass collections that is relevant at the time of the study (Appendix D of SOP). Oiling classification of carcasses will be assigned based on visual oil. Samples of oiled feathers will be collected from visually- oiled carcasses and archived.

DURATION OF STUDY

The oiling observation activities proposed in this study are designed to be implemented in phases, with the decision to implement a subsequent phase dependent on the outcome of the previous phase. Phase 1 consists of the oiling observation activities that will occur within 30 days after execution of the contract (or contractual Notice to Proceed, whichever is sooner). Phase 2 consists of all oiling observation activities that may occur after Phase 1 up to 60 days after execution of the contract (or contractual Notice to Proceed, whichever is sooner). Sometime between 15 and 30 days after the execution of the PI's contract (or contractual Notice to Proceed, whichever is sooner), the Trustees will evaluate the data collected during at least the first fifteen days of oiling observation work to determine the need for additional oiling observation work under this Plan (i.e., whether Phase 2 should proceed). If few or no oiled live birds are observed in any target species category during first 15 days of field work, the live bird field work for that target species will likely be discontinued.

It is assumed that "15 days of field work" equates to three rounds of data collection (e.g., each surveyed ACP grid will be surveyed at least three times in 15 days). It is recognized that weather and other unavoidable delays may interfere with the ability to collect field data in each of these 15 days, possibly resulting in less than three rounds of data to be available for the Trustee decision on whether Phase 2 should proceed. The Trustee discussion may be delayed until additional data are collected so long as the decision on Phase 2 is made *before* the FWS Contracting Office's administrative deadline for approving the Contractor to implement Phase 2 and no later than 29 calendar days after the execution of the PI's contract (or contractual Notice to Proceed, whichever is sooner).

The need for beached bird surveys beyond the termination date of the waterfowl beached bird surveys will be determined 14 days before the waterfowl beach survey termination date, if practical. If few or no oiled carcasses are found on designated beaches, that work will likely also be discontinued.

The Trustees reserve the right to continue work under this Work Plan beyond the termination

dates expressed herein depending on their assessment of whether additional data are needed to determine oiling rates or carcass deposition.

SAMPLE AND DATA HANDLING

All necessary federal, state, and special land use permits will be acquired. Chain-of-custody procedures will be observed at all times for all samples. All samples will be transferred with appropriate chain of custody forms.

All field and laboratory data will be collected, managed and stored in accordance with US EPA Good Laboratory Practice regulations (GLPs) to the extent practicable. In accordance with GLPs, all field and laboratory work, and the calibration and use of field and laboratory equipment (e.g., scales, hand held GPS devices, etc.) shall be conducted using written Standard Operating Procedures (SOPs). The appropriate training on particular equipment or in the conduct of specific field studies for all BRI personnel involved with the project shall be documented, and those records kept on file for the duration of this project.

Field data transfer - Prior to concluding each field day, integrated teams will share (1) all data sheets (2) all official photographs, and (3) the official GPS track log using methods developed as part of the Beached Bird Survey (Study #1) effort. As long as internet connectivity allows, original datasheets will be scanned and emailed daily to the USFWS's Fairhope NRDA Office, and photos will be uploaded daily to the USFWS's ERDC database. On field efforts where LA representatives are present, those field representatives will be responsible for transmitting the day's datasheets and photos to their appropriate headquarters if necessary.

In the event that the data is collected in Louisiana without a Louisiana representative present, those data (data sheets, track logs, photos, any and all data collected as part of the field effort) will be e-mailed, within 3 days of its being collected, to the Louisiana Oil Spill Coordinator's Office on behalf of Louisiana. In the event that transfer of such data is delayed due to equipment malfunction or other reasons, it will be emailed to the Louisiana Oil Spill Coordinator's Office as soon as practicable.

Final Disposition of Original Data and Datasheets - All data (including electronically archived data), and original data sheets or electronic files, must be transferred to the Trustees, with copies to the Louisiana Oil Spill Coordinator's Office on behalf of Louisiana for data collected in that state on a weekly basis. Camera memory cards will be submitted to the U.S. Fish and Wildlife Service's Fairhope, Alabama, NRDA Office under Chain-of-Custody after a card is full or after the study is completed pursuant to a protocol for transferring and uploading digital photos (Appendices E and F of the WOWW SOP)).

GENERAL LOGISTICAL COORDINATION OF FIELD WORK

Scheduling Field Efforts – A good faith effort will be made to conduct all study elements and field effort using integrated teams of state and federal Trustee representatives. State and federal Trustee representatives will meet at least once per week to discuss the general field plan for each target species for the following week. The representatives will discuss the general plan and logistics (e.g., how many field teams will be active, generally where they will be working, generally whether another boat may be needed, etc.), providing all representatives at least three days advance notice of notable changes in field team resources or resource needs. If a party's representative is not present for such a discussion, that party will be notified by phone as soon as practicable about the scheduling decisions. These meetings are in addition to the daily coordination held at the end of each field day to discuss the exact logistical details of the field work to be implemented the following day (e.g., which transects/grids are targeted for the day, morning meeting location, etc.) Each Field Crew Leader is responsible for establishing a daily and weekly schedule for his/her team. If a party's representative is not present for the daily coordination discussion, that party will be notified by phone as soon as practicable about the scheduling decisions.

Boat Capacity - If boat space does not accommodate all members of a field crew, a good faith effort will be made to obtain a larger boat prior to the next outing, unless a larger boat would prevent effective implementation of the survey due to difficulties approaching the shoreline in shallow water or other reasons. Under circumstances where larger boats cannot be utilized, additional shallow draft boats may be obtained; however, every effort will be made to accommodate integrated teams in the same boat.

Durable Equipment - All durable equipment (such as cameras, GPS, etc.) purchased by BP will be returned to BP or their designated representatives at the conclusion of their use for this study.

Carcass Management - Carcasses encountered during field efforts will be processed according to the Deepwater Horizon (MC 252) Oil Spill Carcass Collection Protocol as it may be amended (Appendix D of WOWW SOP).

Any carcasses encountered during the implementation of the WOWW study may be scanned with ultraviolet (UV) light to evaluate the presence of fluorescing substances on the carcass. The evaluation may occur in the field or at the appropriate carcass intake center. Photographs of the fluorescing areas will be taken according to the SOP, "Procedure for Photography of Oil on Avian Plumage Using an Ultraviolet Light Source."

Safety – Field teams will comply with existing training and safety protocols as applicable to operations. Prior to commencement of field activities, the Trustees will agree upon a person or

persons to whom study participants may report any safety concerns. Such person(s) will take action to address and resolve reported concerns.

BUDGET

A description of the budget for the activities of this study plan is in Tables 2 through 4. The budget covers all activities described in this study plan for approximately two months of field efforts and data compilations after day 15 of field oiling observation work, after completion of Phase 1, and after completion of Phase 2. Regarding durable equipment costs, if equipment of the proper specifications are available from the FWS Fairhope NRDA Office (such as equipment previously purchased by BP for other cooperative bird studies), such equipment will be used in lieu of renting or purchasing new equipment for this study. The budget does not include the cost of Trustee agencies' direct participation in, oversight of, or management of the activities associated with this study plan, as the Trustee agencies may seek reimbursement for those under a separate process. It is acknowledged that the approval/signature page of this Study Plan authorizes only those activities and expenses associated with Phase 1 of the proposal. Any activities or expenses outside Phase 1 would require a amendment to the Study Plan.

The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher.

Table 2: Total budget for Objectives 1b and 2 (Phase 1 and Phase 2) broken down by target species.

	Field Time	Admin	Transport	Rm/Board	Supplies	SubTotal
Common loon team	$70,200	$50,700	$5,466	$13,067	$1,600	$141,033
White pelican team	$48,600	$50,700	$32,467	$13,067	$1,600	$146,434
Northern gannet team	$70,200	$50,700	$51,966	$13,067	$1,600	$187,533
					Total	$475,000

Table 3. Total potential budget for Objectives 1b and 2. Costs for Phase 1 (first 30 days) only are shown in far right column.

Category	Item	Unit	$/Unit	Total Cost	Comments connected with Column E (Total Cost)	1st 30 days
Field Time - Oiling Rate Determination						
(40 hrs/wk	Common Loon Lead Field Surveyor	360		$ 27,000	On-site oversight of loon observation	$ 13,500
for 8 wks)	Field Surveyor 1	360		$ 21,600	Second observer	$ 10,800
	Field Surveyor 2	360		$ 21,600	Photographer/observer	$ 10,800
						$ -
	White Pelican Lead Field Surveyor	360		$ 27,000	On-site oversight of pelican observation	$ 13,500
	Field Surveyor 1	360		$ 21,600	Second observer/photographer	$ 10,800
						$ -
	Northern Gannet Lead Field Surveyor	360		$ 27,000	On-site oversight of gannet observation	$ 13,500
	Field Surveyor 1	360		$ 21,600	Second observer	$ 10,800
	Field Surveyor 2	360		$ 21,600	Photographer	$ 10,800
Administrative Time Spent						$ -
(40hrs/wk)	Overall PI	100		$ 18,000	Primary oversight and report writing by PIs	$ 9,000
	Operations Manager	180		$ 18,900	1/2 time on site operations command	$ 9,450
	Project Coordinators (3)	300		$ 31,500	part time project specific oversight by 3 science leads	$ 15,750
	Data and QA/QC Manager	180		$ 16,200	1/2 time data management into ERDC	$ 8,100
	Data and GIS Analysis	360		$ 27,000	Data workup for report and field needs	$ 13,500
	Logistics and Safety Coordinator	180		$ 13,500	1/2 time Assists logistical details for all 3 observation crews	$ 6,750
	Photo Manager	360		$ 27,000	Coordinate and organize all photos taken	$ 13,500
Travel						$ -
	Airline tickets	10		$ 8,000	Round trip tickets if needed	$ 4,000
	Car rental (3 field vehicles, 2 months each)	6		$ 5,400	1 vehicle for each field crew	$ 2,700
	Gas (estimated miles for 3 vehicles)	12000		$ 3,000	Estimated	$ 1,500
	Boat rental (days) - pelicans	30		$ 19,500		$ 9,750
	Boat rental (days) - gannets	30		$ 39,000		$ 19,500
	Boat fuel	60		$ 15,000		$ 7,500
Housing and per diem						$ -
	Hotel / per diem for lead project coordinator (days)	48		$ 7,200		$ 3,600
	BRI Biolodge in Port Sulphur, LA (est. person-days)	300		$ 27,000	3 field crews (1/2 time), operations manager, logistics	$ 13,500
	BRI Biolodge in Ocean Springs, MS (months)	2		$ 5,000	3 field crews (1/2 time), photo manager, QA/QC Manager	$ 2,500
Equipment & Misc. Supplies						$ -
	Digital equipment rental (computer, GPS; crew-months)	3		$ 3,000	Computer, GPS, and Cameras w/ 400 m lens for each field team	$ 1,500
	Supplies and expandables			$ 1,800		$ -
						$ -
TOTAL BUDGET				$ 475,000	**First 30 Day Budget**	$ 236,600

Table 4: Proposed Budget for Objective 1a. (does not show actual expenses for the January flight)

	January			February			
Professional Services	*Daily Rate*	*Days*	*Amount*	*Daily Rate*	*Days*	*Amount*	***TOTAL***
Project Director	$	2	$ 3,000.00	$	2	$ 3,000.00	$ 6,000.00
Data Manager	$	1	$ 800.00	$	1	$ 800.00	$ 1,600.00
Observers (various)	$	8	$ 8,000.00	$	8	$ 8,000.00	$ 16,000.00
Navigator/Recorder	$	8	$ 12,000.00	$	8	$ 12,000.00	$ 24,000.00
Data Transcription/Checking	$	2.5	$ 2,500.00	$	2.5	$ 2,500.00	$ 5,000.00
Mapping/Archiving	$	1.25	$ 750.00	$	1.25	$ 750.00	$ 1,500.00
Subtotal - Personnel			**$ 27,050.00**			**$ 27,050.00**	**$ 54,100.00**
Survey Director	$	8	$ 12,000.00	$	8	$ 12,000.00	$ 24,000.00
Travel/Per Diem, 3 persons			$ 8,700.00			$ 8,700.00	$ 17,400.00
Total Direct Costs			**$ 20,700.00**			**$ 20,700.00**	$ 41,400.00
Overhead @ 12% of DC			$ 2,484.00			$ 2,484.00	$ 4,968.00
TOTAL R.G. Ford			**$ 50,234.00**			**$ 50,234.00**	**$ 100,468.00**
AMD (aircraft-mission)		5	$ 17,500.00	$	5	$ 17,500.00	$ 35,000.00
AMD (aircraft-ferry)		2	$ 7,500.00		2	$ 7,500.00	$ 15,000.00
AMD (pilot per diem)	$	8	$ 1,600.00	$	8	$ 1,600.00	$ 3,200.00
TOTAL AMD[b]			**$ 26,600.00**			**$ 26,600.00**	**$ 53,200.00**
TOTAL COSTS			**$ 76,834.00**			**$ 76,834.00**	**$ 153,668.00**

NOTES:
[a] Each survey to include total of 35 hours flight time (7 hours/day distributed over 5 days)
[b] This budget is for survey costs and assumes a separate AMD billing for the aircraft and pilot. The aircraft will be funded directly through a FWS contract since it will be flying below the 1000'floor for aircraft operation under BP contracts.
Time estimates based on adding two travel days and one weather day to planned survey days.
Therefore, personnel charges for 8 days for a 5 day survey.
Travel/Per Diem estimate based on $1,100 airfare, $200 ground transportation, and $200/day Per Diem per person
Aircraft rental charges expected to total to $17,500 for 35 hours of flight time (7 hours/day).
Aircraft charge estimate includes ferry time of 7.5 hours for the aircraft to the Gulf 15 hours (round trip).
Pilot per diem estimated at $200/day - actual rate may vary.

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WORK PLAN FOR DETERMING OILING AND MORTALITY OF WINTERING OPEN-WATER WATERBIRDS FROM THE DEEPWATER HORIZON (MSC 252) OIL SPILL (BIRD STUDY 12)

****Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment. Each party reserves its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan****

APPROVAL

Trustee NRDA Bird Group Lead

3/11/11
Date

FOR ROLAND GUIDRY

State of Louisiana Trustee Representative

5/5/11
Date