Mississippi Canyon 252

SAND BEACH INJURY ASSESSMENT PLAN

Approval of the Assessment Plan for the continued technical support for the Sand Beach Injury Assessment 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.

This plan will be implemented consistent with existing trustee regulations and policies. All applicable state and federal permits must be obtained prior to conducting work.

The trustees have developed a preliminary conceptual model of the DWH release, potential pathways and routes of exposure, and potential receptors. This preliminary model has informed the trustees' decision to pursue the studies outlined in the work plan.

Kevin D. Reynolds — 5/30/2013

Department of the Interior Trustee Representative — Date

Louisiana Trustee Representative — Date

INTRODUCTION

This assessment plan is for continued technical support for the *Sand Beach Injury Assessment* ("Assessment Plan") as part of the ongoing Natural Resource Damage Assessment ("NRDA") for the Deepwater Horizon/Mississippi Canyon 252 ("MC 252") Oil Spill ("Oil Spill"). Beaches across the Gulf have experienced surface and subsurface oiling as a result of the MC252 release. Re-oiling from the re-mobilization of buried oil and submerged oil mats in the nearshore environment is continuing today. These oiling events along with the initial release of oil have exposed natural resources to oil and have required response actions to remove the oil from sand beaches from Florida to Texas. These response actions have used and are using various manual and mechanical methods to remove oil and debris from the sand beaches that have resulted in modification or impairment of these habitats causing injury to natural resources ("Response Injury"). In addition, a literature review on the effects of oil in beach habitats has been conducted by the Shoreline Technical Working Group ("TWG") which further supports some level of impact due to habitat modification and oil fouling compared to unoiled beaches. Impacts noted in the studies where generally associated with declines in the invertebrate community species abundance and diversity as oiling increased. Sediments and soil compaction by hydrocarbon residues tends to create a physical barrier for burrowing animals and reduced the oxygen supply of the deeper sediment layer, preventing recovery and re-colonization of the beach invertebrate communities (Barth, 2007, Satoh et al., 1999). As a result oiled beaches have been observed to have lower macrofauna diversity than reference sites (Jones et al., 2008b). Thus, as the response continues the Shoreline TWG continues to assess impacts to sand beach habitats due to both MC252 oiling and the Response Injury due to response actions.

Since studies have demonstrated a direct relationship between oiled and non-oiled beach invertebrate communities and habitat quality, the Shoreline TWG is determining the areas impacted by MC252 oiling. Oil-related sand beach injury is being assessed based on the shoreline oil exposure map currently under development within the Shoreline TWG. This map outlines the extent, duration and degree of oiling shoreline has received to date from the MC252 incident. This work will include evaluation of the likely impacts for the different oiling exposure categories and will determine the degree of impacts to sand beach ecosystem services.

Along with oil-related injuries, the Shoreline TWG is assessing the effects of response injury on the sand beach habitats. Response Injury is an injury type separate from, and in addition to, oil exposure and, in some cases, may significantly affect the recovery rates of different habitats and resources, even those that were not directly oiled. The overall objective of the sand beach Response Injury assessment is to compile the various sources of information that may be used to assess injury related to response actions on the shoreline and to categorize and rank the effects of the response action on the sand beach habitat. However, the information on the temporal and spatial extent of response-related injuries is scattered among many organizations, is usually not collected consistently, and has been difficult to obtain.

Significant work in data collection and assessment remains to be completed to support the Shoreline TWG sand beach habitat assessment. Results from these efforts as well as oil toxicity studies currently underway will need to be consolidated into a comprehensive sand beach habitat assessment.

ACTIVITIES

This Assessment Plan includes three assessment categories within the context of the ongoing NRDA: 1) Sand Beach Oil Exposure and Injury Quantification; 2) Sand Beach Response Injury Exposure and Injury Quantification; and 3) Comprehensive Sand Beach Injury Quantification.

Activity 1: Sand Beach Oil Exposure and Injury Quantification

Contractor support will help the Shoreline TWG include analysis of sand beach injury resulting from the MC252 release as part of the ongoing NRDA. The oil-related sand beach injury is being assessed based on the shoreline oil exposure map being developed within the Shoreline TWG. The associated oiling categories and extents within that map will be utilized, along with literature-based evaluations and other studies currently underway, to determine the degree of impacts to sand beach ecosystem services. This work will include evaluation of the likely impacts for the different oiling exposure categories for sand beach habitats. The contractor will also work collaboratively (in order to avoid any duplication of efforts) with the PIs of relevant studies to characterize the impacts of oiling to beach fauna**.**

Activity 2: Sand Beach Response Activities Exposure and Injury Quantification

The identification and collection of information about previous and ongoing response efforts for the MC252 incident are not completed. To more clearly define the extent and duration of injury to the sand beach habitat, the contractor, working with DOI and its co-trustees will acquire and organize new information responsive to the categories of potential injury and/or correlating response actions previously identified by the TWG.

Activity 3: Comprehensive Sand Beach Injury Quantification

To fully evaluate the effects of the MC252 release on the beach habitat, the contractor will join the oiling component of injury using the degree and spatial extent of oil-related injuries to sand beaches over time (Activity 1) with the assessment of response injury (Activity 2). This assessment activity will result in a comprehensive beach injury assessment technical report.

BUDGET

The total costs for this Assessment Plan are $295,321 plus associated Department of the Interior salary costs. The Parties acknowledge that this budget is an estimate, and that actual costs may prove to be higher.

REFERENCES

Barth, H. (2007). Crab Induced Salt Marsh Regeneration after the 1991 Gulf War Oil Spill. Aquatic Ecosystem Health & Management 10(3): 327-334.

Jones, D., M. Hayes, F. Krupp, G. Sabatini, I. Watt and L. Weishar (2008b). The Impact of the Gulf War (1990-91) Oil Release Upon the Intertidal Gulf Coast Line of Saudi Arabia and Subsequent Recovery. Protecting the Gulf's Marine Ecosystems from Pollution: 237-254.

Satoh, H., K. Tshuchiya, R. Tsujimoto, T. Hirano, R. Kado and H. Tokuda (1999). Long-Term Effect of Massive Crude Oil Spill During the Gulf War on Intertidal Invertebrates. Mer 37(1): 11-19.