Addendum to

"Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico"

Date: **November 30, 2011**
Prepared by: **Shawn Clark (MDEQ); Carl Ferraro (ADCNR)**
Mississippi Department of Environmental Quality; Alabama Department Of Conservation and Natural Resources

The Mississippi Department of Environmental Quality (MDEQ) and Alabama Department of Conservation and Natural Resources (ADCNR) adopts the NRDA Trustee work plan entitled *"Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico" (the "Plan"*), dated August 4, 2011, provided that the attached Addendum is incorporated into the Plan in its entirety. The Addendum incorporates the provisions of the Plan except where specifically noted in the comments indicated hereafter.

Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico

Addendum for the States of Mississippi and Alabama

Approval of this work plan is for the purpose of obtaining data for the Natural Resource Damage Assessment (NRDA). 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 regulations and policies. All applicable state and federal permits must be obtained prior to conducting work.

Each laboratory shall simultaneously deliver raw data, including all necessary metadata, generated as part of this work plan as a Laboratory Analytical Data Package (LADP) to the trustee Data Management Team (DMT), the Mississippi Department of Environmental Quality (MDEQ) on behalf of the State of Mississippi, the Alabama Department of Conservation and Natural Resources (ADCNR), and to BP (or ENTRIX on behalf of BP). The electronic data deliverable (EDD) spreadsheet with pre-validated analytical results, which is a component of the complete LADP, will also be delivered to the secure FTP drop box maintained by the trustees' Data Management Team (DMT). Any preliminary data distributed to the DMT shall also be distributed to MDEQ, ADCNR and to BP (or ENTRIX on behalf of BP). Thereafter, the DMT will validate and perform quality assurance/quality control (QA/QC) procedures on the LADP consistent with the authorized Analytical Quality Assurance Plan, after which time the validated/QA/QC'd data shall be made available simultaneously to all trustees and BP (or ENTRIX on behalf of BP). Any questions raised on the validated/QA/QC results shall be handled per the procedures in the Analytical Quality Assurance Plan and the issue and results shall be distributed to all parties. In the interest of maintaining one consistent data set for use by all parties, only the validated/QA/QC'd data set released by the DMT shall be considered the consensus data set. In order to ensure reliability of the consensus data and full review by the parties, no party shall publish consensus data until 7 days after such data has been made available to the parties. Also, the LADP shall not be released by the DMT, MDEQ, ADCNR, BP or ENTRIX prior to validation/QA/QC absent a showing of critical operational need. Should any party show a critical operational need for data prior to validation/QA/QC, any released data will be clearly marked "preliminary/unvalidated" and will be made available equally to all trustees and to BP (or ENTRIX on behalf of BP).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.

Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico

Addendum for the States of Mississippi and Alabama

APPROVED:

Mississippi Trustee Representative — Date: 11/9/2011

Alabama Trustee Representative — Date: 11/8/2011

Department of Interior Representative — Date: 11/9/2011

BP Representative — Date: Jan. 26, 2012

Comments and Modifications Specific to the States of Alabama and Mississippi

The Mississippi Department of Environmental Quality (MDEQ), Alabama Department of Conservation and Natural Resources (ADCNR) (in cooperation with the Geological Survey of Alabama (GSA) and the U.S. Department of the Interior (DOI) adopts the Trustees' work plan entitled *"Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico"*. The plan is considered suitable for the needs of MDEQ, ADCNR and DOI for the Mississippi District of the Gulf Islands National Seashore with the Mississippi/Alabama-specific modifications as described below.

The collection of data outlined in this Sampling and Monitoring Plan for the Assessment of MC 252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico is an injury assessment activity within the Natural Resource Damage Assessment process for the MC 252 Oil Spill.

1. Sites

During the pre-assessment survey in 2010, a total of 130 sites were sampled in Mississippi and Alabama. For Mississippi 11 of the 48 marsh sites were identified as oiled (Figure 1). For Alabama, 8 of the 82 sites were identified as oiled (Figure 2.). MDEQ, ADCNR and DOI plan to conduct the Coastal Wetland Vegetation Assessment at these oiled sites. (No rapid shoreline survey plan for marsh was implemented in Alabama or Mississippi) Details of the sites (lat/long, elevation, distance from shore, etc.) will be obtained from the pre-assessment data set as available.

In addition to the impacted marsh sites, the same number of No Oil Observed (NOO) sites will be selected. Some of the investigated sites may display characteristics different from wetland habitat previously investigated. In such instances, based on the review of collected data, the distinct sites may be grouped as separate wetland habitat for comparison.

2. Field Investigations

Below are MDEQ, ADCNR and DOI's modifications to the Trustee's Coastal Wetland Vegetation work plan (Attachment 1).

- **Mangroves**: Since there are no mangroves along the shores of the State of Mississippi or along the shores of the State of Alabama all activities identified in the Trustees' work plan related to mangrove metrics will not pertain to assessments conducted along the impacted shorelines of the States of Mississippi or Alabama.

- ***Phragmites***: *Phragmites* is not a major component of the marshes along the coast of Mississippi or Alabama. Therefore, the activities identified in the Trustees' work plan as related to *Phragmites* likely will not apply. If isolated stands of *Phragmites* occur at an impacted site in Mississippi or Alabama, MDEQ or ADCNR will not sample these stands if they comprise a small fraction of the oiled vegetation at the site. If the *Phragmites*

stands are larger and significant to the injury of the oiled site, they will be assessed following the protocol in the Trustee's work plan.

- **Real Time Kinematics (RTK) elevation measurements:** RTK measurements may or may not be needed for the sites. MDEQ, ADCNR, DOI and Entrix (on behalf of BP) will determine during the field assessments if RTK surveys will be needed for other study-related data or to assess other potential injuries such as marsh subsidence. If incorporated, the RTK will benefit from existing Continuously Operating Reference Stations maintained by the NOAA National Geodetic Survey, thus eliminating the need for additional benchmarks.

3. Field Equipment and Training

- **Field Equipment:** MDEQ ADCNR and DOI intend to use the same field equipment as the Trustees' team in Louisiana in order to maximize consistency and the exchange of sampling protocols across the NRDA teams. At a minimum, equipment to be used shall include the following:
  - Trimble Geo XH
  - GPS (Garmin 76/60)
  - Spot tracker
  - VHF radio (with charger)
  - Redox meter and probes (18 -19 probes per team)
  - Fluor pen / Chlorophyll meter (with calibration kit)
  - 7 cm aluminum corer with compression cap and extruder and metal file
  - Belowground biomass corer with cap, clamps, and wooden plunger

  This list may be expanded as appropriate. Each field team will have a sufficient number of spares to avoid downtime. Field equipment will be provided to Mississippi and Alabama teams by NOAA through the existing funding framework as agreed to by BP.

- **Field Training**: Marsh Subgroup conducted Marsh Injury Assessment field training in April 2011 in coordination with the Principal Investigators (Mark Hester and Jonathan Willis). MDEQ, GSA, ADCNR , DOI and Entrix staff completed training on the Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation April11-13, 2011. ADCNR, GSA, DOI, and MDEQ's field staffs will participate as needed during the sampling over the course of long-term monitoring.

- **Health and Safety Training**: The Mississippi and Alabama marsh sampling teams have been health and safety trained as specified in the Trustees' work plan and NOAA Field Ops Deepwater Horizon Incident Site Safety Plan. The safety training was combined with the field training held during April 2011. Teams will be outfitted with safety equipment; there is a GPS spot checker system to track teams in the field that monitors the location throughout the day. MDEQ and ADCNR will coordinate the health and safety training with the Operations Teams.

- **Field Teams:** Field teams are expected to consist of approximately five to six members per team including two representatives from the state of Alabama trustees or Mississippi (depending on the state team in question), one Federal Representative, and one representative for the Responsible Party. Additional field staff may be contracted by the ADCNR or MDEQ as necessary.

- **Boats:** Both the state of Alabama and the state of Mississippi will provide their own vessels and operators.

4. Data Management

MDEQ and ADCNR/GSA will provide all data collected to the trustee's DMT as discussed above and to the DOI.

MC 252 NRDA chain-of-custody procedures will be observed at all times for all samples. All samples will be transferred with appropriate chain of custody forms and all samples that will undergo chemical or other analyses will be shipped to the appropriate laboratories for archiving, processing and analysis.

All materials associated with the collection or analysis of samples under these protocols or pursuant to any approved work plan, except those consumed as a consequence of the applicable sampling or analytical process, must be retained unless and until approval is given for their disposal in accordance with the retention requirements set forth in paragraph 14 of Pretrial Order #1 (issued August 10, 2010) and any other applicable Court Order governing tangible items that are or may be issued in MDL No. 2179 In RE: Oil Spill by the Oil Rig "DEEPWATER HORIZON" (.E.D. LA 2010). Such approval to dispose must be given in writing and by a person authorized to direct such action on behalf of the state or federal agency whose employees or contractors are in possession or control of such materials.

Contact information

For questions or comments on this Addendum, please contact:

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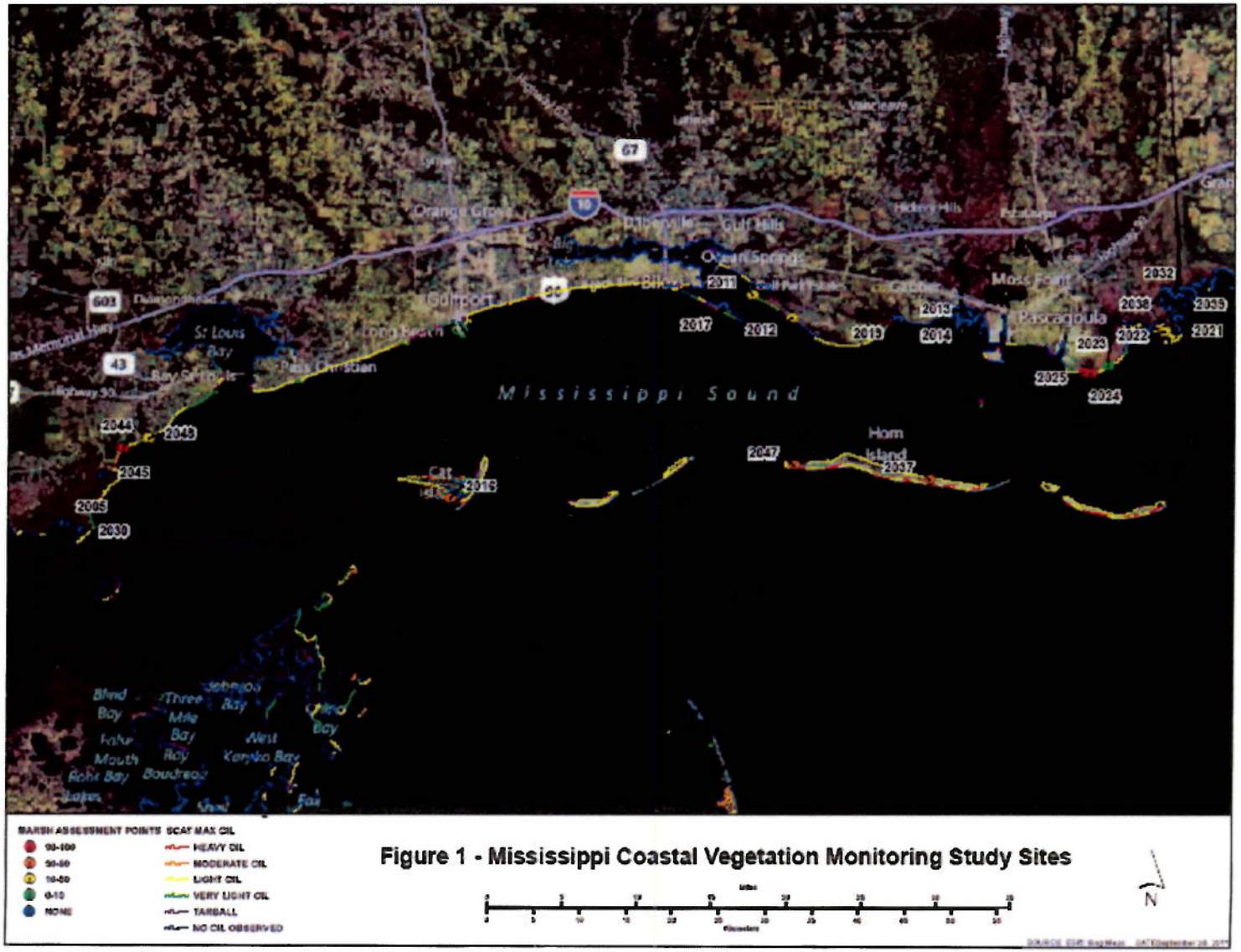

Figure 1 - Mississippi Coastal Vegetation Monitoring Study Sites

SiteID	Latitude	Longitude	Oil Class
11	30.383750	-88.808270	10-50
12	30.364550	-88.769450	10-50
22	30.354690	-88.410240	10-50
48	30.263740	-89.393470	10-50
23	30.324900	-88.465650	0-10
16	30.213400	-89.100390	50-90
37	30.230290	-88.636840	50-90
47	30.241990	-88.767470	50-90
24	30.318650	-88.480570	90-100
25	30.319610	-88.487880	90-100
44	30.255660	-89.417220	90-100
5	30.192150	-89.473350	NOO
13	30.360140	-88.601860	NOO
14	30.367030	-88.600420	NOO
17	30.374260	-88.839010	NOO
19	30.360420	-88.650360	NOO
21	30.364620	-88.396700	NOO
30	30.187250	-89.457920	NOO
32	30.383740	-88.399600	NOO
38	30.387460	-88.409160	NOO
39	30.381890	-88.396620	NOO
45	30.233960	-89.436010	NOO

Table 1. Mississippi Coastal Vegetation Monitoring Study Locations.

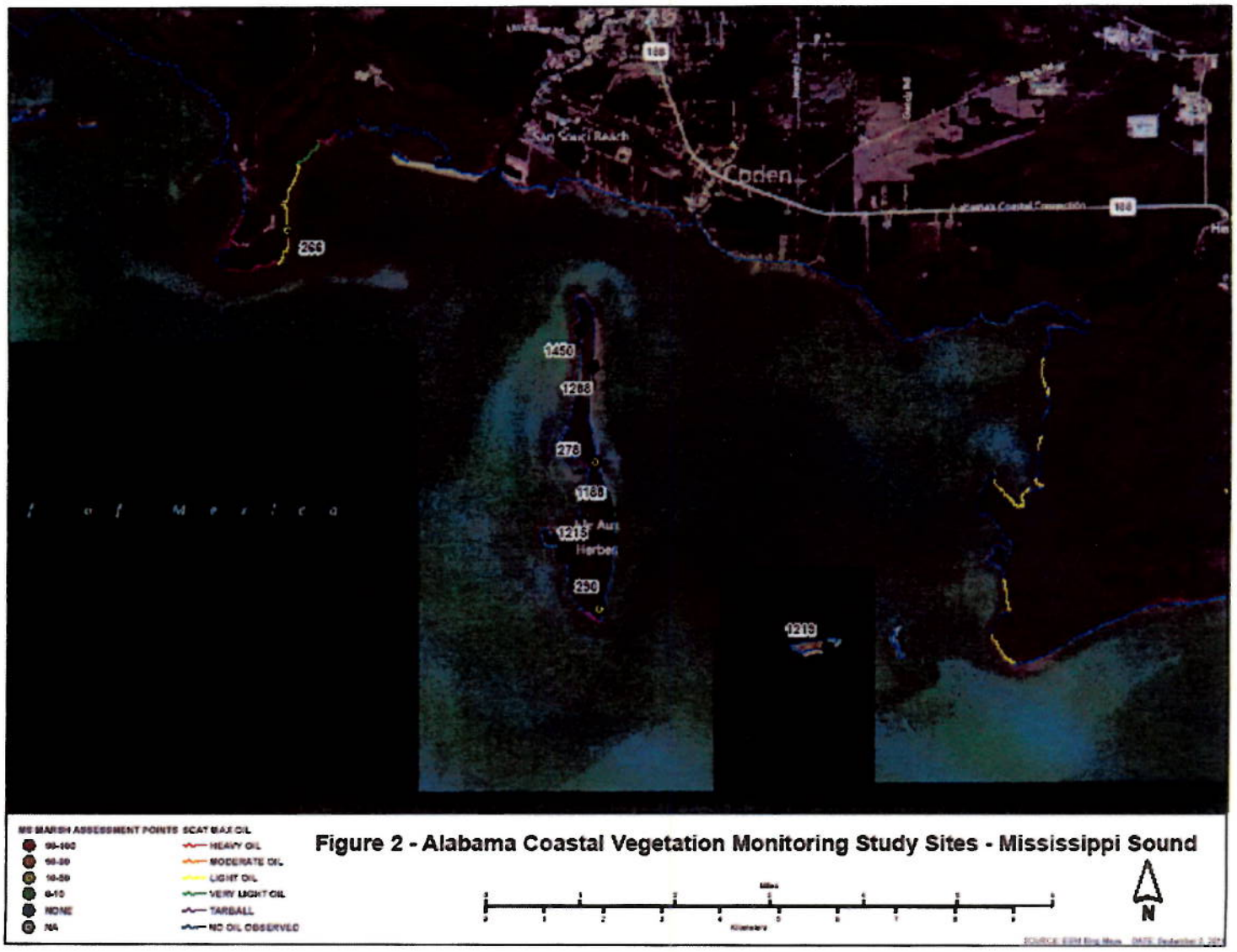

Figure 2 - Alabama Coastal Vegetation Monitoring Study Sites - Mississippi Sound

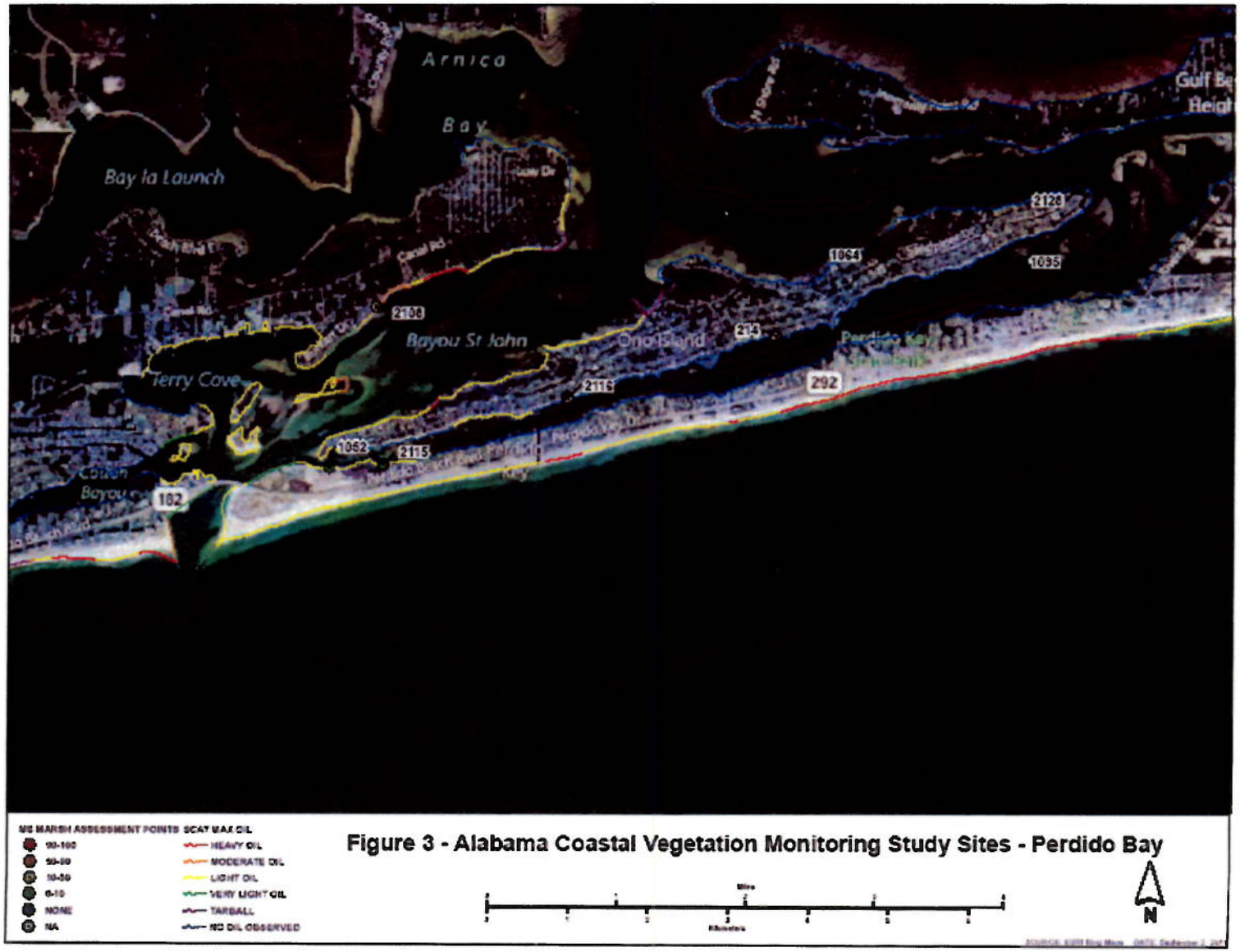

Figure 3 - Alabama Coastal Vegetation Monitoring Study Sites - Perdido Bay

Attachment 1:

Trustees' Work Plan:
Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico

Date: August 4, 2011

Attachment 2:
Budget

The Parties acknowledge that this budget is an estimate, and that actual costs may be higher. This budget does not include salary costs for DOI employees who will be implementing portions of this study. BP's commitment to fund the costs of this work includes any additional reasonable costs within the scope of this approved work plan that may arise. The trustees will make a good faith effort to notify BP in advance of any such increased cost.

Alabama Year 0, Spring 2011

Labor					
Position	Number	Rate ($/hr)	Days	Hours	Cost
Field crew (ADCNR/GSA)	4	$100	15	11	$66,000
Field team leader (Federal Representative)	1	$150	15	11	$24,750
Field chief (ADCNR/GSA Leads)	2	$150	15	11	$49,500
Labor Total					**$140,250**

Travel					
	Unit	Rate ($/unit)	Days	Number	Cost
Overnight Per Diem-Meals & Lodging- AL Rate(GSA Staff)	day	$75	21	3	$4,725
Day Trip Per Diem-AL Rate (ADCNR Staff)	day	$12	21	3	$756
Meals (Federal Rate)	day	$51	21	1	$1,071
Lodging (Federal Rate)	day	$98	21	1	$2,058
Airplane	trip	$500	N/A	0	$0
Travel Total					**$8,610**

Biological vegetative sample evaluation (non-chemical endpoints)			
	Number	Rate ($/sample)	Cost
Aboveground clips	N/A	$600	$0
Belowground cores	44	$350	$15,400
Total vegetative analysis costs			**$15,400**

Alabama Year 0, Spring 2011

Other Direct Costs				
	Unit	Rate ($/unit)	Number	Cost
Car milage	per day	$410	21	$8,610
Boat rental[2]	per day	$1,800	15	$27,000
Trimble Geo XH	per day	NA	NA	$0
HAZWOPER training (24 hour)	per field person	$200	0	$0
Shipping	per cooler	$175	32	$5,600
Equipment[3]				
Trimble Geo XH	each	$12,131	1	$12,131
FluorPen FP 100 handheld fluorometer or equivalent with extra batteries	each	$2,500	1	$2,500
Chlorophyll meter	each	$2,100	1	$2,100
pH/mV/Temperature meter plus bulk buffer	each	$800	1	$800
Redox electrodes	each	$300	13	$3,900
Digital calipers	each	$110	1	$110
Biomass corer	each	$150	1	$150
Bulk density corer	each	$150	1	$150
Non-disposable equipment (other)	per team	$500	2	$1,000
Sediment chemistry sampling jars	per sample	$10	192	$1,920
Plastic liners	per core	$2.10	192	$403
Plastic liner end caps	per core	$0.40	192	$77
Other disposable supplies	per team, per year	$1,500	2	$3,000
ODCs Total				**$57,320**

Total Costs Year 0, Spring 2011	**$221,580**

[1] All NOAA and State Trustee labor costs are recoverable under NRDA but are not calculated here.

[2] Trustees will only seek reimbursement for costs they paid for out-of-pocket.

[3] BP has paid upfront for most or all non-disposable equipment costs. Trustees will only seek reimbursement for costs they paid for out-of-pocket.

Alabama Year 0.5, Fall 2011

Labor					
Position	Number	Rate ($/hr)	Days	Hours	Cost
Field crew (ADCNR/GSA)	4	$100	15	11	$66,000
Field team leader (Federal Representative)	1	$150	15	11	$24,750
Field chief (ADCNR/GSA Leads)	2	$150	15	11	$49,500
Labor Total					**$140,250**

Travel					
	Unit	Rate ($/unit)	Days	Number	Cost
Overnight Per Diem-Meals & Lodging- AL Rate(GSA Staff)	day	$75	21	3	$4,725
Day Trip Per Diem-AL Rate (ADCNR Staff)	day	$11	21	3	$709
Meals (Federal Rate)	day	$51	21	1	$1,071
Lodging (Federal Rate)	day	$94	21	1	$1,974
Airplane	trip	$500	N/A	0	$0
Travel Total					**$8,479**

Biological vegetative sample evaluation (non-chemical endpoints)			
	Number	Rate ($/sample)	Cost
Aboveground clips	44	$600	$26,400
Belowground cores	44	$350	$15,400
Total vegetative analysis costs			**$41,800**

Alabama Year 0.5, Fall 2011

Other Direct Costs				
	Unit	Rate ($/unit)	Number	Cost
Car milage	per day	$410	21	$8,610
Boat rental[2]	per day	$1,800	15	$27,000
Trimble Geo XH	per day	NA	NA	$0
HAZWOPER training (24 hour)	per field person	$200	0	$0
Shipping	per cooler	$175	32	$5,600
Equipment[3]				
Trimble Geo XH	each	$12,131	0	$0
FluorPen FP 100 handheld fluorometer or equivalent with extra batteries	each	$2,500	1	$2,500
Chlorophyll meter	each	$2,100	0	$0
pH/mV/Temperature meter plus bulk buffer	each	$800	0	$0
Redox electrodes	each	$300	3	$900
Non-disposable equipment (other)	per team	$1,000	1	$1,000
Sediment chemistry sampling jars	per sample	$10	192	$1,920
Plastic liners	per core	$2.10	192	$403
Plastic liner end caps	per core	$0.40	192	$77
Other disposable supplies	per team, per year	$1,500	2	$3,000
ODCs Total				**$48,510**

Total Costs Year 0.5, Fall 2011	**$63,910**

[1] All NOAA and State Trustee labor costs are recoverable under NRDA but are not calculated here.

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Mississippi Year 0, Spring 2011

Labor					
Position	Number	Rate ($/hr)	Days	Hours	Cost
Field crew (MRRG)	4	$100	11	11	$48,400
Field team leader (Federal Representative)	2	$150	11	11	$36,300
Field chief (MDEQ Lead)	4	$150	11	11	$72,600
Labor Total					**$157,300**

Travel					
	Unit	Rate ($/unit)	Days	Number	Cost
Meals	day	$56	15	4	$3,360
Lodging	day	$94	15	4	$5,640
Airplane	trip	$500	N/A	0	$0
Travel Total					**$9,000**

Biological vegetative sample evaluation (non-chemical endpoints)			
	Number	Rate ($/sample)	Cost
Aboveground clips	N/A	$600	$0
Belowground cores	61	$350	$21,350
Total vegetative analysis costs			**$21,350**

Mississippi Year 0, Spring 2011

Other Direct Costs				
	Unit	Rate ($/unit)	Number	Cost
Car milage	per day	$410	15	$6,150
Boat rental	per day	$1,800	22	$39,600
HAZWOPER training (24 hour)	per field person	$200	4	$800
Shipping	per cooler	$175	44	$7,700
Equipment[2]				
Trimble Geo XH	each	$12,131	2	$24,262
FluorPen FP 100 handheld fluorometer or equivalent with extra batteries	each	$2,500	2	$5,000
Chlorophyll meter	each	$2,100	2	$4,200
pH/mV/Temperature meter plus bulk buffer	each	$800	2	$1,600
Redox electrodes	each	$300	36	$10,800
Digital calipers	each	$110	0	$0
Biomass corer	each	$150	2	$300
Bulk density corer	each	$150	2	$300
Non-disposable equipment (other)	per team	$500	2	$1,000
Sediment chemistry sampling jars	per sample	$10	220	$2,200
Plastic liners	per core	$2.10	220	$462
Plastic liner end caps	per core	$0.40	220	$88
Other disposable supplies	per team, per year	$1,500	2	$3,000
ODCs Total				**$83,200**

Total Costs Year 0, Spring 2011	**$270,850**

[1] All NOAA and State Trustee labor costs are recoverable under NRDA but are not calculated here.

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Mississippi Year 0.5, Fall 2011

Labor					
Position	Number	Rate ($/hr)	Days	Hours	Cost
Federal					
Field crew (MRRG)	4	$100	11	11	$48,400
Field team leader (Federal Representative)	2	$150	11	11	$36,300
Field chief (MDEQ Lead)	4	$150	11	11	$72,600
Labor Total					**$157,300**

Travel					
	Unit	Rate ($/unit)	Days	Number	Cost
Meals	day	$56	15	4	$3,360
Lodging	day	$94	15	4	$5,640
Airplane	trip	$500	N/A	0	$0
Travel Total					**$9,000**

Biological vegetative sample evaluation (non-chemical endpoints)			
	Number	Rate ($/sample)	Cost
Aboveground clips	61	$600	$36,600
Belowground cores	61	$350	$21,350
Total vegetative analysis costs			**$57,950**

Mississippi Year 0.5, Fall 2011

Other Direct Costs

	Unit	Rate ($/unit)	Number	Cost
Car milage	per day	$410	15	$6,150
Boat rental	per day	$1,800	22	$39,600
HAZWOPER training (24 hour)	per field person	$200	2	$400
Shipping	per cooler	$175	44	$7,700
Equipment[2]				
Trimble Geo XH	each	$12,131	0	$0
FluorPen FP 100 handheld fluorometer or equivalent with extra batteries	each	$2,500	2	$5,000
Chlorophyll meter	each	$2,100	0	$0
pH/mV/Temperature meter plus bulk buffer	each	$800	0	$0
Redox electrodes	each	$300	3	$900
Non-disposable equipment (other)	per team	$1,000	2	$2,000
Sediment chemistry sampling jars	per sample	$10	220	$2,200
Plastic liners	per core	$2.10	220	$462
Plastic liner end caps	per core	$0.40	220	$88
Other disposable supplies	per team, per year	$1,500	2	$3,000
ODCs Total				**$62,500**

Total Costs Year 0.5, Fall 2011	**$286,750**

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