

DWH SETTLEMENT COMMUNICATION

Deepwater Horizon/Mississippi Canyon 252 Spill

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

Approval of this work plan is for the purposes 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 the work plan.

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 Louisiana Oil Spill Coordinator's Office (LOSCO) on behalf of the State of Louisiana, the Mississippi Department of Environmental Quality (MDEQ) on behalf of the State of Mississippi, the Alabama Department of Conservation and Natural Resources (ADCNR) on behalf of the State of Alabama, and to BP (or Cardno 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 LOSCO, MDEQ, ADCNR, and to BP (or Cardno 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 Cardno 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 dataset released by the DMT shall be considered the consensus dataset. 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, LOSCO, MDEQ, ADCNR, BP or Cardno 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 Cardno 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.

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

Protocol for Fall 2012 Sampling and Monitoring for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico

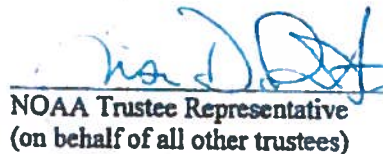
APPROVED:

 4/10/2013
Louisiana Trustee Representative: Date

 03/19/2013
Mississippi Trustee Representative: Date

 3/11/13
Alabama Trustee Representative: Date

 9 Jan. 2013
BP Representative: Date

 1/7/2013
NOAA Trustee Representative
(on behalf of all other trustees) Date

Deepwater Horizon/Mississippi Canyon 252 Spill

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

Protocol for Fall 2012 Sampling and Monitoring for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico

Under the *Sampling and Monitoring Plan for the Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation in the Gulf of Mexico* (Coastal Wetland Vegetation Plan), selected coastal sites in the Gulf were sampled and monitored in order to assess the impacts of MC252 oil on coastal wetland vegetation as well as on soil characteristics and elevation. As provided under this plan, three field events have been conducted: one in the fall of 2010, one in the spring of 2011, and one in the fall of 2011. Additional sites for sampling and monitoring were added to the plan through two addenda: (1) *The Addendum for the States of Mississippi and Alabama*; and (2) *The Protocol for Sampling and Monitoring Marsh Response Cleanup Areas*. The former added sites in Mississippi and Alabama, which were sampled in both the spring and fall of 2011. The latter added sites in marsh areas targeted for cleanup by the Deepwater Horizon Response effort. These response cleanup sites were largely established in February of 2011 and sampled during the spring of 2011 and again during the fall of 2011. This document presents an addendum to the Coastal Wetland Vegetation Plan in order to facilitate an additional sampling and monitoring event in the fall of 2012, which would include Coastal Wetland Vegetation Plan sites as well as all the sites established under the two aforementioned addenda.

This addendum extends the Coastal Wetland Vegetation Plan as provided for in the original plan (see Section I: Introduction and Objectives in the Coastal Wetland Vegetation Plan) for a fall 2012 sampling season. During the fall 2012 sampling event, the general survey procedures described in the Coastal Wetland Vegetation Plan will be followed (see Section V: General Survey Procedures) with the following modifications:

- Light-adapted fluorescence measurements will not be taken at any site, herbaceous or mangrove.
- Chlorophyll content measurements will not be taken at any site, herbaceous or mangrove.
- Soil redox potential measurements will not be determined at any site, herbaceous or mangrove.
- Real time kinematic (RTK) elevation measurements will not be taken at any site, herbaceous or mangrove.

- The following changes will be made to lab analyses. The complete list of lab analyses planned for fall 2012 is found in Table 1.
 - Nutrient analyses will be reduced to ammonia, total phosphorous, and sulfate.
 - Sufficient material from core samples will be archived such that grain size analysis may be performed at a later date.
 - Metal analyses will not be performed on the soil samples collected for chemical characterization.

Table 1: Coastal Wetland Vegetation Fall 2012 Planned Lab Analyses

	Sample Type				
	SS Surface Soil Scoops	SCC Soil Core Chemical	SCP Soil Core Physical	B Belowground Biomass Core	C Clip Plot Vegetation
Analyses planned under the fall 2012 CWV addendum					
Hydrocarbons / PAHs	X				
Total Organic Carbon (TOC)	X				
Belowground Vegetation Biomass				X	
Aboveground Vegetation Biomass					X
Vegetation Stem Count					X
Vegetation Longest/Shortest - Stem Length					X
Vegetation Species ID					X
Vegetation Live/Dead sort					X
Soil Organic Matter		X			
Total Solids		X			
pH / Salinity		X			
Nutrients - Ammonia, Total Phosphorus, Sulfate		X			
Soil Bulk Density			X		
True Grain Size			archive		
Nutrients - Nitrate/Nitrite	Not required for fall 2012 collection				
Metals	Not required for fall 2012 collection				

- Site sampling will be conducted in two phases.
 - Forward teams will first visit sites, reestablish plots if necessary, and collect post-Hurricane Isaac recon data, including a sketch of the site. An additional PVC stake topped with a “T” junction and wrapped twice with black electrical tape within one foot of the stake top will be placed at the current marsh edge to mark the fall 2012 marsh edge and left in place. If the fall 2012 marsh edge is exactly in the same location as the original shoreline state, and the original shoreline stake is still present, then the fall 2012 marsh edge stake will be placed directly adjacent to the original shoreline stake on the transect. Forward teams will use this stake for determining the fall 2012 marsh edge coordinates.
 - Sampling teams will follow the forward teams and will complete the site set-up verification datasheet as well as the observation and sample collection datasheets for the site. Sampling teams will also collect data on any observed oiling inland from the inland stake in an area 10 meters on either side of the transect. Samplers will follow specific guidance for sampling in partially eroded plots (see below).
- Guidance for sampling at partially eroded plots will be provided.
 - *Herbaceous sites:*
 - (1) If the 2012 productivity subplot (clip plot) is partially eroded, samplers will determine whether they can take a fully intact below ground biomass (B) core.

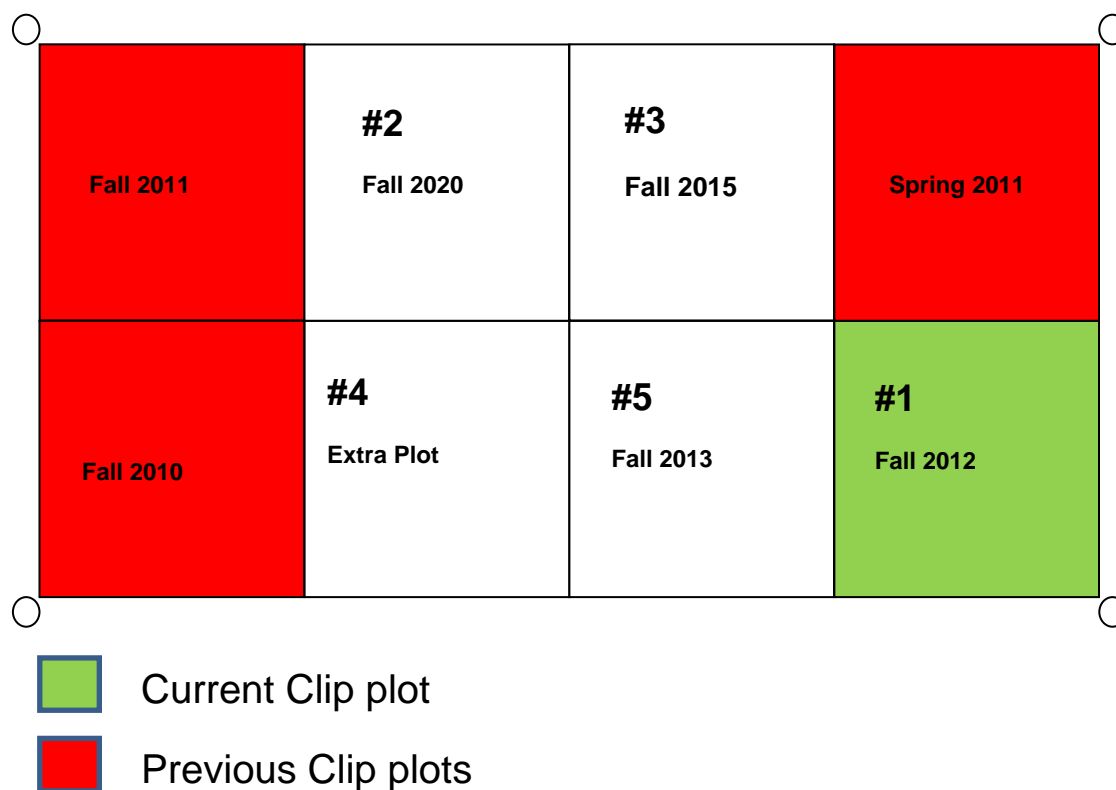
Samplers may be able to visually inspect and will also have a plywood disk that is slightly larger in diameter than the B corer, which can be laid down as a gauge for the B core. If the B core can be taken, the plot is considered viable for sample collection and all samples will be collected as feasible. The soil scoops will be collected in the designated corners of the subplot. If a corner has eroded, soil scoop locations will not be moved to collect that scoop. Therefore, fewer than 4 soil scoops may be taken. The SCP and SCC cores will be taken outside of the plot in the areas designated in the herbaceous datasheets. If erosion prevents collection of these cores outside of the plot, they can be moved within the 2012 subplot. If there is limited non-eroded surface to collect both the SCC and SCP cores, the sampling priority is the SCC core.

- (2) If the 2012 productivity subplot is not viable (B core cannot be collected), sampling will be relocated to alternate productivity subplots in the following order of priority (see Figure 1 for locations):
 - a. 2020 subplot
 - b. 2015 subplot
 - c. Extra subplot
 - d. 2013 subplot

If the subplot is partially eroded, the guidance in step (1) will be used to determine if the plot is viable for collection (i.e., whether a B core can be taken). If the plot is viable, collection will proceed as in step (1), noting that the soil scoops cannot be relocated. If there is limited non-eroded surface to collect both the SCC and SCP cores, the priority is the SCC core. If none of the subplots are viable for sample collection of the B core, then samplers will evaluate all available subplots and identify the subplot with the greatest non-eroded surface area, where the SCP and SCC samples will be collected, as feasible, following guidance in step (1). Figure 2 provides the sampling decision flow chart for determining subplots at partially eroded sites.

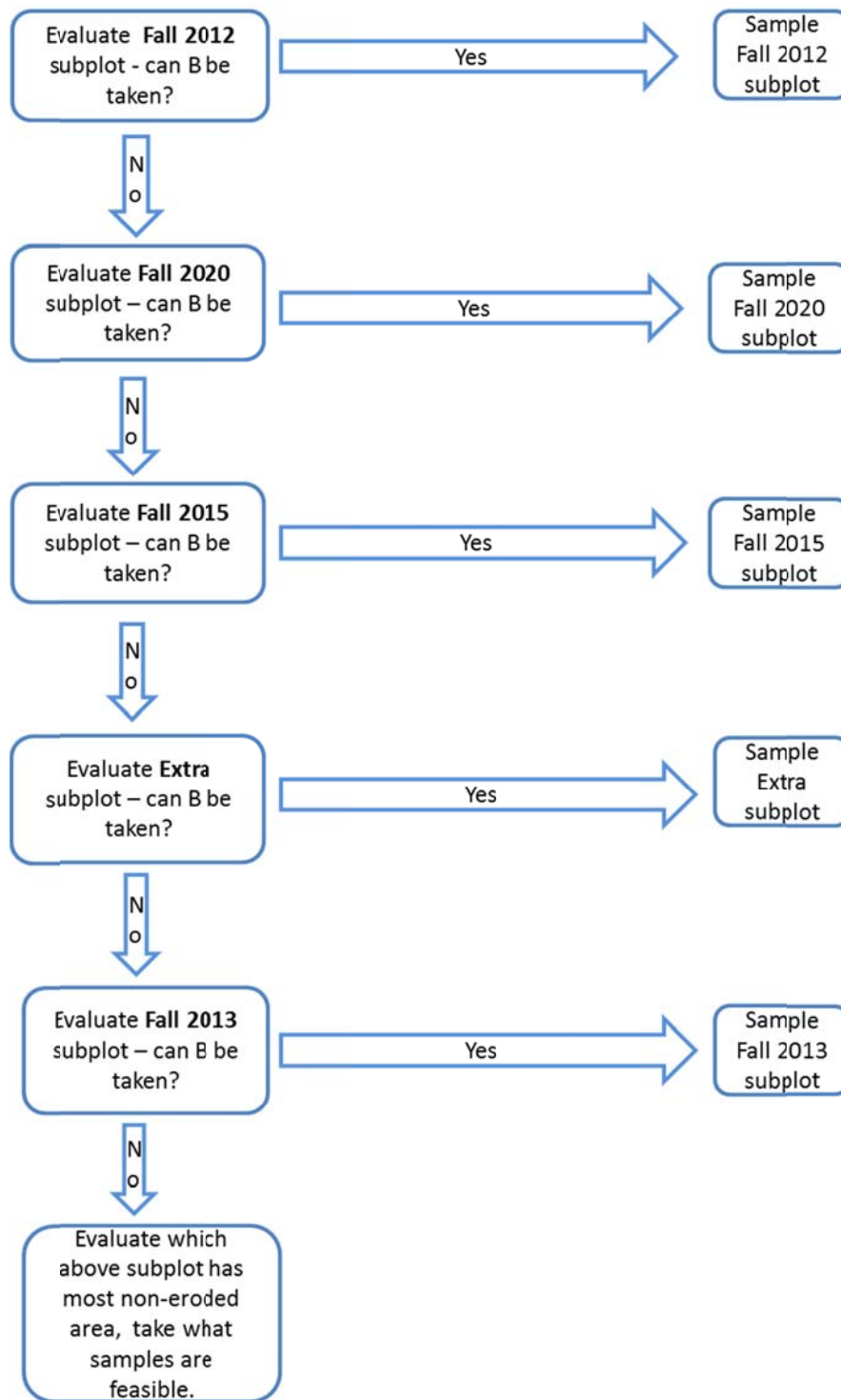
- (3) If the B core is viable, all samples will be collected per the field sampling protocol. If there is limited non-eroded surface to collect the SCC and SCP cores, priority will be given to the SCC core.
- (4) Samplers will state which productivity subplot (e.g. 2012, 2015) is used in the notes section. Samplers will also draw an 'X' in the subplot on the station diagram on the sample collection datasheet. Samplers will draw in locations of the collected samples.

Figure 1: Productivity subplots (clip plots) and priority¹ for sampling eroded sites in fall 2012.



¹ Numbers in subplots represent the priority for sampling.

Figure 2: Sampling decision flow chart for partially eroded sites



○ *Mangrove sites:*

- (1) Samplers will first determine whether they can take a fully intact belowground biomass (B) core base on sufficient non-eroded marsh, not previously cored or exposed to heavy foot traffic, to allow for filling the core diameter. If possible, samples will be taken on the right side of the mangrove-intensive plot looking inland (Figure 3). If not possible, the B coring location will be relocated as follows:
- (2) If the 2012 mangrove-intensive 1 m² plot is partially eroded:
 - a. If the mangrove-intensive plot is in location 1, 2, or 3 based on Figure 4, looking inland, the coring location will be moved to the right of the 1 m² mangrove-intensive plot up to 0.5 m along the inland edge of the 1 m x 4 m plot (see Figure 5). If there is still not sufficient non-eroded marsh for B coring, the location will be moved further to the right of the mangrove-intensive plot along the inland edge up to a maximum distance of 1 m from the mangrove-intensive plot. If the inland edge along the 1 m distance shows evidence of previous coring or heavy foot traffic such that a B core should not be taken, the sampling location will be moved to the inside of the 1 m x 4 m plot following the same lateral movement guidance of not exceeding the 1 m maximum distance from the intensive plot. The sampling locations will be clearly marked and labeled on the datasheets.
 - b. If the mangrove-intensive plot is in location 4 based on Figure 4, looking inland, the coring location will be moved to the left of the 1 m² mangrove-intensive plot up to 0.5 m along the inland edge of the 1 m x 4 m plot (see Figure 5). If there is still not sufficient non-eroded marsh for B coring, the location will be moved further to the left of the mangrove-intensive plot along the inland edge up to a maximum distance of 1 m from the mangrove-intensive plot. If the inland edge along the 1 m distance shows evidence of previous coring or heavy foot traffic such that a B core should not be taken, the sampling location will be moved to the inside of the 1 m x 4 m plot following the same lateral movement guidance of not exceeding the 1 m maximum distance from the intensive plot. The sampling locations will be clearly marked and labeled on the datasheets.
- (3) The soil cores for physical (SCP) and chemical (SCC) analyses will be relocated to the same area as the belowground core location. If there is not sufficient non-eroded marsh for both cores, preference will be given to the SCC core.
- (4) Soil contaminant scoops will not be relocated, but taken with the mangrove-intensive plot corners where there is non-eroded marsh. Therefore, it is possible that fewer than 4 scoops will be able to be collected.
- (5) All coring locations (whether relocated or not) will be clearly indicated on the datasheets.
- (6) All other mangrove (non-coring) data collection will proceed as stated in the Coastal Wetland Vegetation Plan for mangroves within the established plot boundaries.

Figure 3: Location of core samples relative to mangrove-intensive plot if fully intact B core can be taken

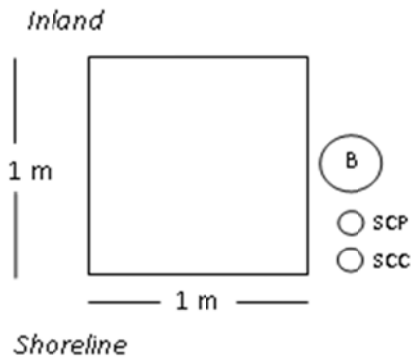


Figure 4: The four positions of the 1 m² mangrove-intensive plot.

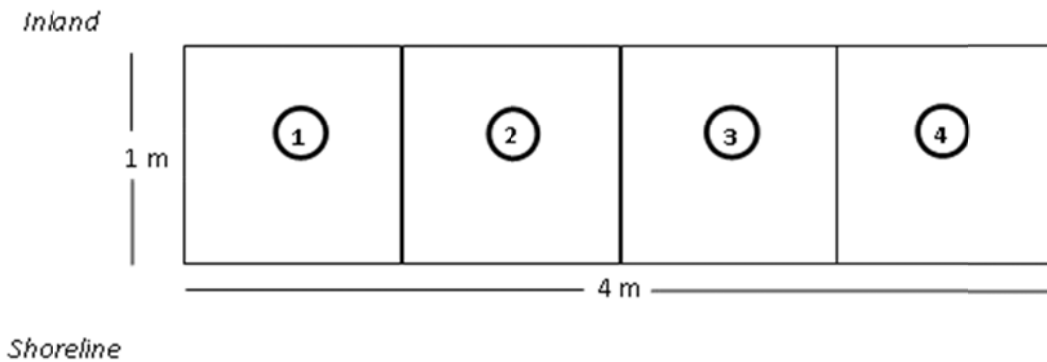
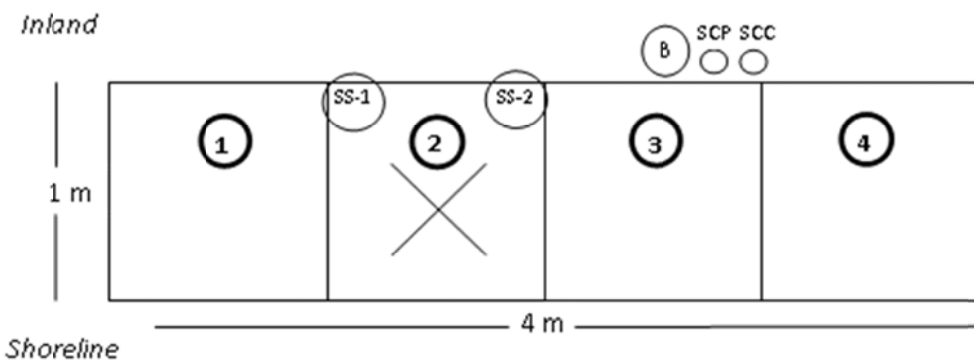


Figure 5: The location of core samples relative to the 1 m x 4 m plot if partial erosion requires movement of core locations.



Note: This example assumes partial erosion of a mangrove-intensive plot located in position 2. Proper marking of the station diagram on the datasheet is also shown: the 'X' in the location of the mangrove-intensive plot and the locations of soil scoops that can be collected in the mangrove-intensive plot. In this case, because of erosion, only two soil scoops could be collected from the mangrove-intensive plot.

- Guidance for sampling at mangrove and herbaceous sites experiencing sand burial will be provided.
 - Some sites experienced sand burial as a result of Hurricane Isaac. In order to determine the degree of burial, additional measurements will be taken during the first sampling phase at these sites. Forward teams will use sharpshooter shovels in 2 locations (just shoreward and just landward) of the plots and insert until resistance. The sampler will gently rock the shovel back to determine if the pre-Isaac surface is visible, measure the depth, and then close the hole. Information will be recorded in the notes section of the datasheet.
 - During the second phase, these sites with sand burial will be sampled as follows:
 - Sites with less than 2cm of burial will be sampled using the protocol without modification.
 - Sites with 2cm – 10cm of burial will be sampled using the protocol with one addition. When chemical cores are collected, samplers will note the depth of sand overburden in the cores to gauge the depth of burial at the sites. This information will be recorded in the notes section of the datasheet.
 - Sites with greater than 10cm of burial will not be sampled.

The datasheets and quick reference guides will be updated as appropriate to reflect the changes to the sampling and monitoring procedures outlined above.

Coastal Wetland Vegetation Plan – Post Hurricane Isaac Recon Datasheet		Page ____ of ____																																																
1	Team #: _____ Date: _____ Time (24hr): _____ Site ID: _____																																																	
2	Data Recorder/Affiliation: _____																																																	
3	Other Team Members/Affiliations: _____																																																	
Site / Station Verification																																																		
4	Vegetation Transect Markers:																																																	
	Shoreline Stake Present / Absent	If absent, was it replaced? Yes / No / NA																																																
	Inland Stake Present / Absent	If absent, was it replaced? Yes / No / NA																																																
5	Station Markers:																																																	
	<table border="0" style="width: 100%;"> <thead> <tr> <th colspan="2"></th> <th colspan="2" style="text-align: center;">Number of Stakes</th> <th colspan="2"></th> </tr> <tr> <th colspan="2"></th> <th style="text-align: center;">Absent</th> <th></th> <th style="text-align: center;">Replaced</th> <th></th> </tr> </thead> <tbody> <tr> <td>C1:</td> <td>_____</td> <td></td> <td></td> <td>_____</td> <td></td> </tr> <tr> <td>C2:</td> <td>_____ / NA</td> <td></td> <td></td> <td>_____ / NA</td> <td></td> </tr> <tr> <td>C3:</td> <td>_____ / NA</td> <td></td> <td></td> <td>_____ / NA</td> <td></td> </tr> <tr> <td>P1:</td> <td>_____</td> <td></td> <td></td> <td>_____</td> <td></td> </tr> <tr> <td>P2:</td> <td>_____ / NA</td> <td></td> <td></td> <td>_____ / NA</td> <td></td> </tr> <tr> <td>P3:</td> <td>_____ / NA</td> <td></td> <td></td> <td>_____ / NA</td> <td></td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;">Note that NA only applies if the plot was never established</p>				Number of Stakes						Absent		Replaced		C1:	_____			_____		C2:	_____ / NA			_____ / NA		C3:	_____ / NA			_____ / NA		P1:	_____			_____		P2:	_____ / NA			_____ / NA		P3:	_____ / NA			_____ / NA	
		Number of Stakes																																																
		Absent		Replaced																																														
C1:	_____			_____																																														
C2:	_____ / NA			_____ / NA																																														
C3:	_____ / NA			_____ / NA																																														
P1:	_____			_____																																														
P2:	_____ / NA			_____ / NA																																														
P3:	_____ / NA			_____ / NA																																														
6	Bearing to Inland Stake: _____° (Obtained from Site Set-Up Datasheet)																																																	
7	Bearing Inland Stake to Shoreline Stake: _____° (If 0° ≤ line ≤ 180°, then add 180°; if 180° < line ≤ 360°, then subtract 180°)																																																	
8	Fall 2012 Marsh Edge Coordinates: Latitude: _____ Longitude: _____ Way Pt: _____																																																	
9	Transect Length: _____ meters (Obtained from Site Set-Up Datasheet)																																																	
10	Distance from Inland Stake to Marsh Edge: _____ meters																																																	
11	Greater than Trace Oil Beyond Inland Stake (circle one): Yes / No																																																	
Site Diagram																																																		
12																																																		
Photos																																																		
13	Upon arrival: Offshore (1-2 m) looking inland (center of photo left of cover plots): _____ Offshore (1-2 m) looking inland (center of photo access point between cover and productivity plots): _____ Offshore (1-2 m) looking inland (center of photo right of productivity plots): _____																																																	
14	During post-storm recon: At shoreline stake: looking inland: _____ looking right: _____ looking left: _____ At inland stake: looking shoreward: _____ looking right: _____ looking left: _____ looking inland: _____																																																	
Notes: _____																																																		

Sign Off:**Date****Time (24 hr)**

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan – Site Set-Up Verification Datasheet						Page ____ of ____	
1	Team #: _____		Date: _____		Time (24hr): _____		
2	Site ID: _____		Sampler Team Code: _____				
3	Data Recorder/Affiliation: _____						
4	Other Team Members/Affiliations: _____						
Site / Station Verification							
5	Vegetation Transect Markers:						
	<i>Initial Shoreline Stake</i>		Present / Absent		If absent, do not replace.		
	<i>Initial Inland Stake</i>		Present / Absent		If absent, was it replaced? Yes / No / NA		
	<i>Fall 2012 Marsh Edge Stake</i>		Present / Absent		If absent, was it replaced? Yes / No / NA		
6	Station Markers:						
	Number of Stakes		Evidence of Erosion in Plot?			If Yes, Extent of Erosion (%)	
	<i>Enter NA only if the plot was never established Otherwise, use a value 0-4 as appropriate</i>		<i>Circle NA only if the plot was never established</i>			<i>If No or NA, write in NA</i>	
	Absent	Replaced					
C1:	_____	_____	C1:	Yes / No	_____		
C2:	_____	_____	C2:	Yes / No / NA	_____		
C3:	_____	_____	C3:	Yes / No / NA	_____		
P1:	_____	_____	P1:	Yes / No	_____		
P2:	_____	_____	P2:	Yes / No / NA	_____		
P3:	_____	_____	P3:	Yes / No / NA	_____		
Point Data for Vegetation Transect Shoreline Change and New Oiling Information							
7	Bearing to Inland Stake: _____ ° <i>(Obtained from Site Set-Up Datasheet)</i>						
8	Bearing Inland Stake to Shoreline Stake: _____ ° <i>(Add 180° to Bearing to Inland Stake if the bearing is between 0° and 180° and subtract 180° if the bearing is between 180° and 360°)</i>						
9	Transect Length: _____ meters <i>(Obtained from Site Set-Up Datasheet)</i>						
10	Distance from Inland Stake to Marsh Edge: _____ meters						
11	Oil Distribution Beyond Inland Stake (circle one):	Trace (<1%)	Sporadic (1-10%)	Patchy (11-50%)	Broken (51-90%)	Continuous (91-100%)	NA
	<i>Note: If 'Trace (<1%)' or 'NA' is circled in line 11, enter NA into the three fields in line 12</i>						
12	Oil Distance from Inland Stake: _____ meters <i>(If beyond 20 m, write >20)</i>				Photos: _____ Waypoint: _____		
Photos							
14	<i>Upon arrival:</i>						
	Offshore (1-2 m) looking inland (center of photo left of cover plots): _____						
	Offshore (1-2 m) looking inland (center of photo access point between cover and productivity plots): _____						
	Offshore (1-2 m) looking inland (center of photo right of productivity plots): _____						
15	<i>During data collection:</i>						
	At shoreline stake:						
	looking inland: _____	looking right: _____	looking left: _____				
	At inland stake:						
	looking shoreward _____	looking right: _____	looking left: _____	looking inland: _____			
16	<i>Upon departure:</i>						
	Offshore (1-2 m) looking inland (center of photo left of cover plots): _____						
	Offshore (1-2 m) looking inland (center of photo access point between cover and productivity plots): _____						
	Offshore (1-2 m) looking inland (center of photo right of productivity plots): _____						
Notes:							

Sign Off:

Date

Time (24 hr)

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Page of

1	Team #: _____	Date: _____	Time (24 hr): _____
2	Site ID: _____	Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____		
4	Other Team Members/Affiliations: _____		

5	Habitat Type/Plot ID (circle one): C-1 / C-2 / C-3 (<i>C-1 is edge plot</i>)
---	--

6	Water on Marsh: Yes / No If yes, record depth (if no, write NA): _____ cm	(if >15cm, no further data to be collected)
---	---	---

Note: Constraint does not apply to Phrag

7	Vegetation Condition Index (circle one):	0	0.5	1	2	3	NA
---	--	---	-----	---	---	---	----

8	Sediment Surface Oiling Coverage: _____ % if underwater, denote with UW
---	---

9	Veg. Oiling Extent Index – On This Season's Growth (circle one):	0	0.5	1	2	3	NA
---	--	---	-----	---	---	---	----

10 Oiling Height – On This Season's Growth (cm): _____* (Highest point on stem from sediment surface)

*If vegetation is heavily oiled and cannot be stood up or is oiled stubble, enter HO instead of measurement; if no oiling, enter NA.

11	Total Live Cover (%): _____	16	Debris Cover (%): _____
----	-----------------------------	----	-------------------------

12	Total Dead Cover (%): _____	17	Boom Cover (%): _____
----	-----------------------------	----	-----------------------

13	Total Vegetative Cover (%): _____	18	Dominant Species Average Live Canopy Height (cm): _____
----	-----------------------------------	----	---

14	Wrack Cover (%): _____	19	Vegetation Stature: _____ (ST = standing; LO = laid over)
----	------------------------	----	---

15 Photos: 45°: _____ 90°: _____ Waypt: _____ *All % cover measurements should be made relative to the entire 1m² plot.
 †If appropriate (see ORG), write NA in these fields.

*All % cover measurements should be made relative to the entire 1m² plot.

‡If appropriate (see QRG), write NA in these fields.

Species Name (Scientific)	Live Cover (%)	Dead Cover (%)	Visibly Dominant	Additional Information
---------------------------	----------------	----------------	------------------	------------------------

			Species (X) (select one)	
--	--	--	---------------------------------	--

20	Spartina alterniflora				
----	-----------------------	--	--	--	--

21	Juncus roemerianus			

22	Phragmites australis			
23				

23	<i>Avicennia germinans</i>			
24	<i>Batis maritima</i>			

24	<i>Distichlis spicata</i>			
25	<i>Spartina patens</i>			

25	<i>Spartina patens</i>			
26	<i>Salicornia</i> sp.			

26	Salicornia sp.			
27	Ratis maritima			

27	Datis maritima			
28	Aster sp			

28	Aster sp.			
29	Borrichia frutescens			

30				
----	--	--	--	--

31				
----	--	--	--	--

32				
----	--	--	--	--

33				
----	--	--	--	--

*All % cover measurements should be made relative to the entire 1m² plot.

Sign Off:

Date	Time (24 hr)
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Responsible Party Representative/Affiliation: _____

State Representative/Affiliation:

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan - Herbaceous Marsh Sample Collection Datasheet

Page ___ of ___

1	Team #: _____	Date: _____	Time (24 hr): _____
2	Site ID: _____	Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____		
4	Other Team Members/Affiliations: _____		
5	Habitat Type/Zone ID (circle one): 1 / 2 / 3 (1 is edge zone)		
6	Water on Marsh: Yes / No If yes, record depth: _____ cm (if >15cm, no further data to be collected) (If no, write NA) <i>Note: Constraint does not apply to Phragmites</i>		
7	Photos: 45°: _____ 90°: _____ Waypt: _____ <i>Take photo of productivity plot</i>		

Inland <div style="border: 1px solid black; width: 150px; height: 100px; margin: 10px auto;"></div> <div style="text-align: center; margin-top: 10px;"> 1 m *2nd SCC Phragmites only ^2nd SCP Phragmites only + 2 offset B samples for Phragmites </div> <div style="text-align: center; margin-top: 10px;"> (A) (O) SCP </div>	Station Diagram <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px;"></div> <div style="margin: 0 10px;">2020 Extra</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px;"></div> <div style="margin: 0 10px;">2015 2013</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px;"></div> </div> <div style="text-align: center; margin-top: 10px;"> 2 m (A) (O) SCC </div>	Productivity Plot <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px;"></div> <div style="margin: 0 10px;">SS-1 C B+</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px;"></div> <div style="margin: 0 10px;">SS-2 SS-3 SS-4</div> </div> <div style="text-align: center; margin-top: 10px;"> (A) (O) SCP </div>
---	--	--

INSTRUCTIONS:

Draw an "X" through the P subplot sampled.

Draw in locations of samples, if different than where shown.

			Sample ID#											
	Sample Collected (circle one)	Time (24hr)	Grid Code Ex: LAAP39		YearDate Ex: C0905		Matrix	Sampler Team Code	Site ID (4 digits)	Plot Type (C or P)	Zone ID (1, 2, 3)	Sample Type (C, B, SC, or SS)	Sample Depth (cm)	Corer Type (circle one)
8	Y / N			-		-	T			P		C	NA	NA
9	Y / N			-		-	L			C		SCP^	10	ALC / RPC
10	Y / N			-		-	L			C		SCC*	10	ALC / RPC
11	Y / N			-		-	L			P		SCP^	10	ALC / RPC
12	Y / N			-		-	L			P		SCC*	10	ALC / RPC
13	Y / N			-		-	T			P		B+	30	STS / RPC
14	Y / N			-		-	L			P		SS-1	2	NA
15	Y / N			-		-	L			P		SS-2	2	NA
16	Y / N			-		-	L			P		SS-3	2	NA
17	Y / N			-		-	L			P		SS-4	2	NA

18 If sample in row 8 (above) is collected and site is Phragmites: No. Live Stems: _____ No. Dead Stems: _____ Otherwise, write NA in the blanks.

Sample Type Notes:

C=clip plot (vegetation)

For Phragmites, record number of live and dead stem prior to bagging clip plot sample

B=belowground biomass core from productivity plot (collect 1 from center of designated productivity plot area+); circle corer type

SCP=soil core (collect 1 from each plot type^)-physical characterization; circle corer type

SCC=soil core (collect 1 from each plot type*)-chemical characterization; circle corer type

#Full sample ID (all 10 columns above) must be written on sample containers and associated forms

*For Phragmites 2 SCC cores will be collected with a RPC and placed into 1 SCC container for chemical characterization

^For Phragmites 2 SCP cores will be collected with a RPC and placed into 1 SCP containers for physical characterization

+For Phragmites 2 offset B cores will be collected with a RPC within the designated area of the productivity plot and placed into 1 container

SS=soil scoops from productivity plot (collect 4 for contaminant analysis in glass jars)

Corer types: STS = large stainless corer for belowground biomass;

ALC = aluminum corer; RPC = Russian peat corer

The Sample ID should end with the plot type letter, habitat zone number, and sample type; e.g., the label for a mid-zone cover plot soil core-physical is "...C2SCP". Note that the plot type and the sample type identifier are pre-labeled for each sample ID in the above table

19 **Photos (belowground biomass):**

Notes:**Sign Off:**

Date _____ Time (24 hr) _____

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan – Post Hurricane Isaac Recon Datasheet				Page ____ of ____
1	Team #: _____	Date: _____	Time (24hr): _____	Site ID: _____
2	Data Recorder/Affiliation: _____			
3	Other Team Members/Affiliations: _____			
Site / Station Verification				
4	Vegetation Transect Markers:			
	Shoreline Stake	Present / Absent	If absent, was it replaced?	Yes / No / NA
	Inland Stake	Present / Absent	If absent, was it replaced?	Yes / No / NA
5	Station Markers:			
		Number of Stakes		
		Absent	Replaced	
	C1:	_____	_____	
	C2:	_____	_____	
	C3:	_____	_____	
6	Bearing to Inland Stake: _____ ° <i>(Obtained from Site Set-Up Datasheet)</i>			
7	Bearing Inland Stake to Shoreline Stake: _____ ° <i>(If 0° ≤ line 6 ≤ 180°, then add 180°; if 180° < line 6 ≤ 360°, then subtract 180°)</i>			
8	Fall 2012 Marsh Edge Coordinates: Latitude: _____ Longitude: _____ Way Pt: _____			
9	Transect Length: _____ meters <i>(Obtained from Site Set-Up Datasheet)</i>			
10	Distance from Inland Stake to Marsh Edge: _____ meters			
11	Greater than Trace Oil Beyond Inland Stake (circle one): Yes / No			
Site Diagram				
12				
Photos				
13	Upon arrival:			
	Offshore (1-2 m) looking inland <i>(center of photo right of cover plots):</i> _____			
	Offshore (1-2 m) looking inland <i>(center of photo access point):</i> _____			
14	During post-storm recon:			
	At shoreline stake:			
	looking inland: _____	looking right: _____	looking left: _____	
	At inland stake:			
	looking shoreward _____	looking right: _____	looking left: _____	looking inland: _____
Notes:				

Sign Off:

Date **Time (24 hr)**

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan – Site Set-Up Verification Datasheet						Page ____ of ____
1	Team #: _____		Date: _____		Time (24hr): _____	
2	Site ID: _____		Sampler Team Code: _____			
3	Data Recorder/Affiliation: _____					
4	Other Team Members/Affiliations: _____					
Site / Station Verification						
5	<u>Vegetation Transect Markers:</u>					
	<i>Initial Shoreline Stake</i>	Present / Absent	If absent, do not replace.			
	<i>Initial Inland Stake</i>	Present / Absent	If absent, was it replaced? Yes / No / NA			
	<i>Fall 2012 Marsh Edge Stake</i>	Present / Absent	If absent, was it replaced? Yes / No / NA			
6	<u>Station Markers:</u>					
	Number of Stakes				If Yes, Extent of Erosion (%)	
	Absent	Replaced	Evidence of Erosion in Plot?		If No, write NA	
C1:	_____	_____	Yes / No		_____	
C2:	_____	_____	Yes / No		_____	
C3:	_____	_____	Yes / No		_____	
Point Data for Vegetation Transect Shoreline Change and New Oiling Information						
7	Bearing to Inland Stake: _____° (<i>Obtained from Site Set-Up Datasheet</i>)					
8	Bearing Inland Stake to Shoreline Stake: _____° <small>(Add 180° to Bearing to Inland Stake if the bearing is between 0° and 180° and subtract 180° if the bearing is between 180° and 360°)</small>					
9	Transect Length: _____ meters (<i>Obtained from Site Set-Up Datasheet</i>)					
10	Distance from Inland Stake to Marsh Edge: _____ meters					
11	Oil Distribution Beyond Inland Stake (circle one):	Trace (<1%)	Sporadic (1-10%)	Patchy (11-50%)	Broken (51-90%)	Continuous (91-100%)
	<small>Note: If 'Trace (<1%)' or 'NA' is circled in line 11, enter NA into the three fields in line 12.</small>					
12	Oil Distance from Inland Stake: _____ meters (<i>If beyond 20 m, write >20</i>) Photos: _____ Waypoint: _____					
Photos						
13	<i>Upon arrival:</i>					
	Offshore (1-2 m) looking inland (<i>center of photo right of cover plots</i>): _____					
	Offshore (1-2 m) looking inland (<i>center of photo access point</i>): _____					
14	<i>During data collection:</i>					
	At shoreline stake:					
	looking inland: _____	looking right: _____	looking left: _____			
	At inland stake:					
	looking shoreward _____	looking right: _____	looking left: _____	looking inland: _____		
15	<i>Upon departure:</i>					
	Offshore (1-2 m) looking inland (<i>center of photo right of cover plots</i>): _____					
	Offshore (1-2 m) looking inland (<i>center of photo access point</i>): _____					
Notes:						

Sign Off:**Date****Time (24 hr)**

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan - Mangrove Marsh Cover Plot Datasheet						Page ____ of ____				
1	Team #: _____		Date: _____		Time (24 hr): _____					
2	Site ID: _____		Sampler Team Code: _____							
3	Data Recorder/Affiliation: _____									
4	Other Team Members/Affiliations: _____									
5	Habitat Type/Plot ID (circle one): C-1 / C-2 / C-3 (<i>C-1 is edge plot</i>)									
6	Water on Marsh: Yes / No If yes, record depth (if no, write NA): _____ cm (if >15cm, no further data to be collected)									
Oiling Impact Extent – 1m x 4m Plot										
7	Mangrove Vegetation Condition Index (Mangrove Adult ≥50cm) (circle one):				0	0.5	1	2	3	NA
8	Mangrove Vegetation Condition Index (Mangrove Seedling <50cm) (circle one):				0	0.5	1	2	3	NA
9	Dominant Herbaceous Species Vegetation Condition Index (circle one):				0	0.5	1	2	3	NA
10	Sediment Surface Oiling Coverage: _____ % if underwater, denote with UW									
11	Adult Tree Veg. Oiling Extent Index (circle one):				0	0.5	1	2	3	NA
12	Seedling (<50cm) Veg. Oiling Extent Index (circle one):				0	0.5	1	2	3	NA
Plotwide (1m x 4m Plot*) Vegetation Information										
13	Total Live Cover (%): _____				19	Boom Cover (%): _____				
14	Total Dead Cover (%): _____				20±	Mangrove Avg Live Canopy Height (cm): _____				
15	Total Vegetative Cover (%): _____				21±	Dominant Herbaceous Species Average Live Canopy Height (cm): _____				
16	Wrack Cover (%): _____				22±	Herbaceous Vegetation Stature: _____ (ST=standing; LO=laid over)				
17	Debris Cover (%): _____				23±	Maximum Live Tree Height (cm): _____				
18	Photos: 45° L ⁺ : _____ 45° R ⁺ : _____ Waypt: _____				*All % cover measurements should be made relative to the entire 1m x 4m plot.					
⁺ L=take photo with back against transect; R=take photo facing transect [±] If appropriate (see QRG), write NA in these fields.										
Cover by Species (1m x 4m Plot*)										
Species Name (Scientific)		Live Cover (%)	Dead Cover (%)	Visibly Dominant Herb Species (X) (select one)	Additional Information					
24	Avicennia germinans									
25	Spartina alterniflora									
26	Juncus roemerianus									
27	Distichlis spicata									
28	Spartina patens									
29	Salicornia sp.									
30	Blutaparon vermiculare									
31	Batis maritima									
32	Aster sp.									
33	Borrchia frutescens									
34										
35										
36										
37										
*All % cover measurements should be made relative to the entire 1m x 4m plot.										
Notes:										

Sign Off:

Date Time (24 hr)

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Coastal Wetland Vegetation Plan - Mangrove Plot Datasheet – 1m²

Page ____ of ____

1	Team #: _____	Date: _____	Time (24 hr): _____
2	Site ID: _____	Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____		
4	Other Team Members/Affiliations: _____		
5	Habitat Type/Plot ID (circle one): C-1 / C-2 / C-3 (C-1 is edge plot)		

Oiling Impact Extent – 1m² Plot

6	Oiling Height (cm): _____ * (Highest point on stem (mangrove or co-dominant) from sediment surface) *If vegetation is heavily oiled and cannot be stood up or is oiled stubble, enter HO instead of measurement; if no oiling, enter NA.
---	---

Vegetation Information in 1m² Subplot

7	Number of Pneumatophores: _____	8	Pneumatophore Avg Height (cm): _____
9	Propagule Production Estimate (circle one): <100 100 to <500 500 to 1000 >1000		
10	Tagged Adult Trees (≥50cm in height)		

Tag No.	Live-Dead-New-Missing (circle one)	Height (cm)	Main Stem Diameter (cm) at 10 cm Height	Canopy Diameter (cm)		No. Live Primary Branches off Main Stem	No. Dead Primary Branches off Main Stem
				Largest Diameter	Perpendicular Diameter		
FD*	Live - Dead - New - Missing						
FD*	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
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	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						
	Live - Dead - New - Missing						

11	Mangrove Plot Supplemental Adult Datasheet Completed for this plot? (circle one) Yes / No
----	---

Adult Notes:

*Note: For at least one tree and one seedling per plot, measurements will be independently generated by two team members. Both the original and duplicate measurement will be marked with "FD."

Sign Off:

Date _____ Time (24 hr) _____

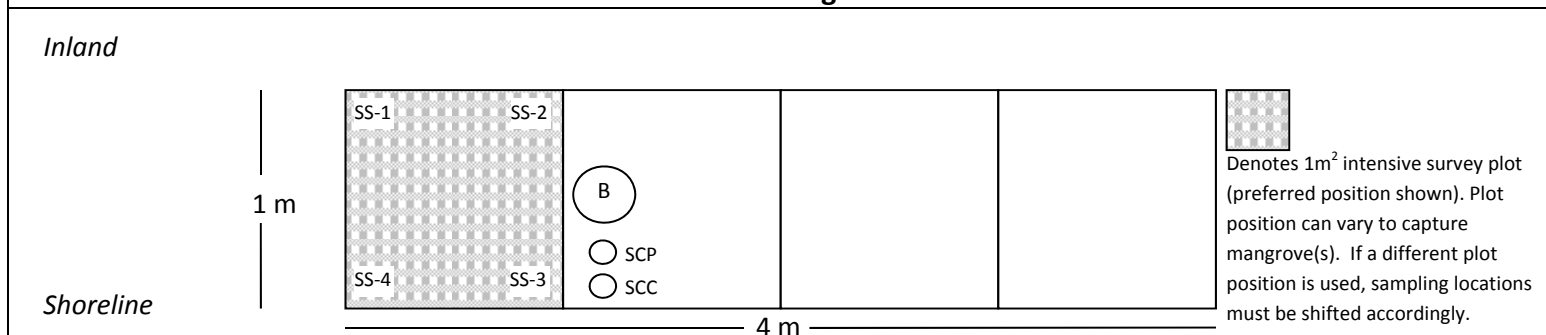
Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Sign Off:		Date	Time (24 hr)
Responsible Party Representative/Affiliation: _____			
State Representative/Affiliation: _____			
Federal Representative/Affiliation: _____			

Coastal Wetland Vegetation Plan		Page ____ of ____
Mangrove Marsh Sample Collection Datasheet – 1m²		
1	Team #: _____ Date: _____ Time (24 hr): _____	
2	Site ID: _____ Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____	
4	Other Team Members/Affiliations: _____	
5	Habitat Type/Plot ID (circle one): C-1 / C-2 / C-3 (C-1 is edge plot)	

Station Diagram

			Sample ID#											
	Sample Collected (circle one)	Time (24hr)	Grid Code Ex: LAAP39		YearDate Ex: C0905		Matrix	Sampler Team Code	Site ID (4 digits)	Plot Type (C or P)	Zone ID (1, 2, 3)	Sample Type (C, B, SC, or SS)	Sample Depth (cm)	Corer Type
6	Y / N			-		-	T			C		B	30	STS
7	Y / N			-		-	L			C		SCP	10	ALC
8	Y / N			-		-	L			C		SCC	10	ALC
9	Y / N			-		-	L			C		SS-1	2	NA
10	Y / N			-		-	L			C		SS-2	2	NA
11	Y / N			-		-	L			C		SS-3	2	NA
12	Y / N			-		-	L			C		SS-4	2	NA

Sample Type Notes:

B=belowground biomass core from plot (collect 1 from outside plot, as shown above)
 SCP=soil core (collect 1 from outside plot as shown above)-physical characterization
 SCC=soil core (collect 1 from outside each plot as shown above)-chemical characterization
 SS=soil scoops from plot (collect 4 for contaminant analysis)

Corer types: STS = large stainless corer for belowground biomass;

ALC = aluminum corer

The Sample ID should end with the plot type letter, habitat zone number, and sample type; e.g., the label for a mid-zone plot soil core-physical is "...C2SCP". Note that the plot type and the sample type identifier are pre-labeled for each sample ID in the above table

#Full sample ID (all 10 columns above) must be written on sample containers and associated forms

13 **Photos (belowground biomass):** _____ **Waypoint:** _____

Notes:**Sign Off:****Date****Time (24 hr)**

Responsible Party Representative/Affiliation: _____

State Representative/Affiliation: _____

Federal Representative/Affiliation: _____

Page ____ of ____

1	Team #: _____	Date: _____	Time (24 hr): _____
2	Site ID: _____	Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____		
4	Other Team Members/Affiliations: _____		
5	Habitat Type/Plot ID (circle one): C-1 / C-2 / C-3 (<i>C-1 is edge plot</i>)		

10	Tagged Adult Trees ($\geq 50\text{cm}$ in height)
----	--

[illegible]

Adult Notes:

Date	Time (24 hr)
------	--------------

Federal Representative/Affiliation: _____

Page of

1	Team #: _____	Date: _____	Time (24 hr): _____
2	Site ID: _____	Sampler Team Code: _____	
3	Data Recorder/Affiliation: _____		
4	Other Team Members/Affiliations: _____		

11	Tagged Seedlings (<50cm in height). Measure height, main stem diameter, and # live leaves on all seedlings.
----	---

On unbranched seedlings, also determine # of leaf nodes and internode distance on main stem.

[illegible]

†If dead or missing, record only this field and tag number

Seedling Notes:

Sign Off:

Date	Time (24 hr)
------	--------------

Responsible Party Representative/Affiliation:

State Representative/Affiliation:

Federal Representative/Affiliation:

Coastal Wetland Vegetation Plan Data/Sample Collection Quick Reference Guidance – Herbaceous Marsh

Plan ID: Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation

General Coastal Vegetation Assessment Guidance

1. **Planning and Logistics**

The day's sites, launch times, and intake locations will be posted on the NRDA Field Ops Marsh Team Tracking Whiteboard.

2. **NRDA Field Operations Safety Information**

At beginning of day, be sure to check in with NRDA Field Ops on the 700 mhz radio or by cell phone notifying ICP when on water. Turn spot tracker on by depressing the on button (top button) until it blinks green. Then depress and hold the "bootprint" button until it blinks green. When done properly, the GPS light will blink green intermittently and the "sent" light will begin blinking green momentarily. **ONLY USE LITHIUM BATTERIES IN SPOT TRACKERS.** Be sure to notify NRDA Field Ops of any changes to the personnel onboard prior to departing dock. Call in to NRDA Field Ops for a mid-day check and when off water. This is your float plan; any deviations from this instruction will result in a USCG violation and breach of standard safety protocol for the entire project. Please complete a "Daily Safety Vessel Checklist" for each boat. If any of the listed safety items are not present or if the registration number provided by Field Ops does not match the registration number on the vessel, please call NRDA Field Ops (504-303-2086) prior to the commencement of operations. Take a photograph of the registration number on the side of the boat.

3. **GPS Logs**

All field teams should have at least one Garmin Map 76 or Map 60 assigned. Before leaving the dock, turn on your GPS. Once satellite signal has been acquired, take a picture of your location screen with time (collect two photos if not on same screen). Clear unit of all previous way points or tracks, then turn on track log. Your GPS will be given to data intake for download of your daily activity. *Note: GPS operation is a Trustee function.*

4. **Data Intake**

Data intake personnel will download files from all electronic equipment (GPSs and camera) along with the scanning of the original datasheets produced in the field. **All information and samples will be relinquished to the sample intake crews under proper chain-of-custody documentation.** Following data upload, the data intake team will supply each member of the team with an electronic copy of the transfer to be placed on a USB thumb drive. If no data are collected by a sample team, no approach photos need be taken and no datasheet filled out unless site is not sampled due to erosion. Information about why the site was unable to be sampled should be included in the team's daily summary to Field Ops. Data intake personnel will provide guidance as to laboratory destination and specific analyses to be performed.

Specific Datasheet Guidance:

Post Hurricane Isaac Recon Datasheet (Fall 2012 – v4)

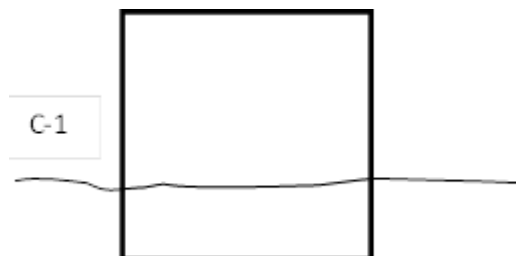
Note: Upon reaching a transect, the forward teams will complete this datasheet. This is the only datasheet that forward teams will complete. Previously completed "Site Visit/Set-Up" datasheets are provided in a booklet to each team for reference.

1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time site set-up was verified. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
Site ID: Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
2. **Data Recorder/Affiliation:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
3. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 2 for format.
4. **Vegetation Transect Markers:** Note the presence or absence of the shoreline and inland stake and whether or not the absent stake was replaced. If the stake was present, indicate 'NA' for its replacement. If the inland PVC stake is missing, but the shoreline stake is present, then the missing PVC stake should be replaced. Place an additional PVC stake topped with a "T" junction and wrapped twice with black electrical tape within one foot of the stake top at the current marsh edge to mark the Fall 2012 marsh edge and leave in place. If the Fall 2012 marsh edge is exactly in the same location as the original shoreline state, and the original shoreline stake is still present, then place the Fall 2012 marsh edge stake directly adjacent to the original shoreline stake on the transect. Use this stake for determining the Fall 2012 marsh edge coordinates (line 8). Consult the original "Site Visit/Set Up Datasheet" to determine the appropriate bearing from the inland PVC state to the interface with the marsh edge where the Fall 2012 marsh edge stake is to be placed (see line 6). Note that bearings were recorded from the Shoreline PVC stake to the Inland PVC stake. Therefore, teams will need to add 180° if the bearing is between 0° and 180° and subtract 180° if the bearing is between 180° and 360° (see line 7) to correctly place the Fall 2012 marsh edge stake.
5. **Station Markers:**
 If all PVC stakes at a plot are missing due to erosion then that plot cannot be reestablished. For all plots missing PVC stakes due to a factor other than complete erosion (storms, vandalism, etc.), the position of the front left PVC stake will be verified using a Trimble GPS unit (provided in booklet). If the front left PVC stake is missing, then it should be reestablished using a Trimble GPS unit. If other PVC stakes marking plots are missing, then see below.
 - a. After the position of the front left PVC stake has been verified, and if 1 or more other PVC stakes are present, then any other missing PVC stakes can be replaced using the appropriately-sized quadrat.
 - b. If no other PVC stakes are present, then the missing PVC stakes should be replaced using the verified front left PVC stake in conjunction with an appropriately-sized quadrat, the RTK coordinates of the plot center (provided in booklet), and visual evidence of previous belowground biomass core (always inside productivity plot) and physical and chemical core (always outside both plot types) sampling location, also provided in the booklet.
 If the plot was never established, circle 'NA' for the number of absent and replaced stakes.
6. **Bearing to Inland Stake:** Record this value from the Site Set-Up datasheet.
7. **Bearing Inland Stake to Shoreline Stake:** Calculate this value by adding 180° to line 6 if the bearing is between 0° and 180° or subtracting 180° from line 6 if the bearing is between 180° and 360°.
8. **Fall 2012 Marsh Edge Coordinates:** Use a Trimble GPS unit to record the Fall 2012 marsh edge stake coordinates. Record a waypoint at the stake.
9. **Transect Length:** Record this value from the Site Set-Up datasheet.
10. **Distance from Inland Stake to Marsh Edge:** Distance should be recorded in meters.
11. **Greater than Trace Oil Beyond Inland Stake:** Note whether or not more than trace oil is observed at the site inland from the inland stake.
12. **Site Diagram:** Use the site diagram template to draw in the current shoreline relative to the locations of the plots. If zone 3 or zone 2 plots were never established at the site, mark an 'X' through the appropriate boxes on the diagram and ensure that the answers in line 5 above for these plots are 'N/A'. If part of a plot is eroded, indicate that by drawing the appropriate location of the current marsh edge with the respective box. See example below.

Note: directions for all photographs are from the photographer's perspective.

13. **Photos: Upon arrival:** Note the photo number(s) for each of the three types of photos to be taken upon arrival.
14. **Photos: During post-storm recon:** Note the photo numbers(s) for each of the seven types of photos to be taken during post-storm monitoring.

Example of marsh edge drawing: In this case, a pre-printed C-1 plot box at an herbaceous site has a drawing indicating the current marsh edge is within the plot.



Site Set-up Verification Datasheet (Fall 2012 – v4)

Note: Upon reaching a transect, the "Coastal Wetland Vegetation Plan – Site Set-Up Verification" datasheet should be completed first. Previously completed "Site Visit/Set-Up" datasheets are provided in a booklet to each team for reference.

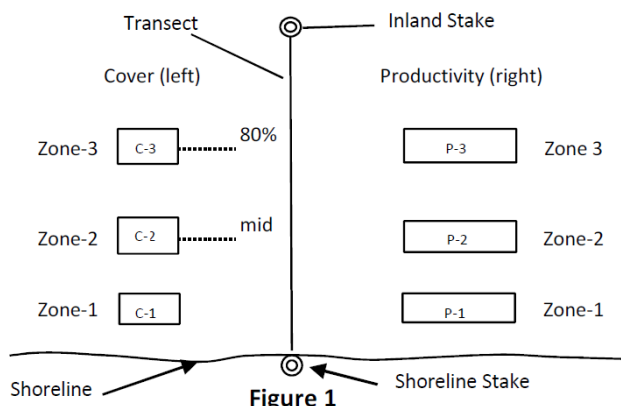
1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time site set-up was verified. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
2. **Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
3. **Data Recorder/Affiliation:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
4. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 3 for format.
5. **Vegetation Transect Markers:** Note the presence or absence of the initial shoreline, initial inland, and Fall 2012 marsh edge stake. If the stake was present, indicate NA for its replacement. If the initial shoreline stake is missing, it will not be replaced. If either the initial inland or Fall 2012 marsh edge stake is missing and the team has a Trimble unit, replace the stake. If for any reason, either of these two stakes are not replaced, note that in the logbook.
6. **Station Markers:**
 For any plot, if 1 or 2 PVC poles that mark the plot are missing, then replacement PVC poles should be employed to re-mark plots fully.
 For any plot, if 3 PVC poles that mark the plot are missing, then replacement PVC poles should be carefully employed to re-mark plots fully according to the following constraints. Plots must be carefully re-established in such a fashion that they do not include former areas of destructive sampling, such as soil core collection or walk paths outside of the plot. Consult the "Site Visit/Set Up Datasheet" to verify distances as appropriate.
 If all the PVC poles marking a plot are missing, then see below.
 - a. If PVC poles are missing due to erosion then this plot cannot be re-established.
 - b. If PVC poles are missing due to factors other than erosion (e.g., vandalism) and there is clear evidence of the location of the plot (e.g., markings from PVC poles or previously collected cores), then the plot should be re-established in the same location.
 - c. If PVC poles are missing due to factors other than erosion (e.g., vandalism) and there is not clear evidence of the location of plot, then the plot should be revisited with a Trimble GPS and reestablished using coordinates provided by NRDA Field Ops, previous Site Set-Up datasheets, and the GPS as a guide.
 If a plot is submerged or partially submerged, it should be sampled to the extent feasible and should not be re-established at a different location. Any signs of erosion should be noted on the datasheets and in the field notebook. If the water depth exceeds 15 cm at a Spartina plot, the site should not be sampled. Rather, the water depth should be recorded in the logbook, no datasheets should be filled out, and the site should be revisited when the water level is lower. This water depth restriction does not apply to Phragmites plots.
 If the plot was never established, write 'NA' for the number of absent and replaced stakes as well as for the evidence of erosion in the plot.
 If the plot was established, indicate the number of stakes absent and replaced and the evidence of erosion.
7. **Bearing to Inland Stake:** Record this value from the Site Set-Up datasheet.
8. **Bearing Inland Stake to Shoreline Stake:** Calculate this value by adding 180° to line 6 if the bearing is between 0° and 180° or subtracting 180° from line 6 if the bearing is between 180° and 360°.
9. **Transect Length:** Record this value from the Site Set-Up datasheet.
10. **Distance from Inland Stake to Marsh Edge:** Distance should be recorded in meters.
11. **Oil Distribution:** Circle the appropriate oil distribution based on the surface area coverage of the oil. If no oil was observed beyond the inland stake, circle NA. Consider an area approximately 10m on either side of the transect to the farthest inland point of observed oil or 20 m inland of the inland stake, whichever is closest to the inland stake.
12. *Note: if no oil or trace oil (<1%) was observed beyond the inland stake, write NA for the following fields.*
Distance from Inland Stake: Record the distance parallel to the transect of the inland stake to the farthest inland point of observed oil. This measurement should be made along the transect. If farthest inland point of observed oil is beyond 20 m inland of the inland stake, write '>20'.
Photos: Take at least 2 photographs of the observed oiling and record the photograph numbers.
Waypoint: Take a waypoint at the farthest inland point of observed oil.

Note: directions for all photographs are from the photographer's perspective.

13. **Photos: Upon Arrival:** Note the photo number(s) for each of the three types of photos to be taken upon arrival.
14. **Photos: During Data Collection:** Note the photo numbers(s) for each of the seven types of photos to be taken during data collection.
15. **Photos: Upon Departure:** Note the photo numbers(s) for each of the three types of photos to be taken upon departure.

Herbaceous Marsh Cover Plot Datasheet (Fall 2012 – v4)

- Team Number:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time plot sampled; time should not be the same for all plots at the site. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
- Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
- Data Recorder:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
- Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 3 for format.
- Habitat Type/Plot ID:** Consult Figure 1 and select the corresponding plot ID for habitat type. There will be one cover plot data sheet per cover plot.



- Water on Marsh:** Record water depth in centimeters-should be measured in the plot and represent an average water depth for the entire plot. If no water is on marsh, write NA for depth. *Note: No data can be collected if greater than 15 cm for Spartina and Mangroves. Data may be collected at depths greater than 15 cm in Phragmites sites when safe to do so.*
- Vegetation Condition Index:**
NA = No vegetation in plot.
0 = Vegetation having a natural appearance, stem/leaf chlorosis not exceeding a slight mottling or occasional yellowing as observed in reference plots.
0.5 = Vegetation having an intense speckled chlorosis.
1.0 = Vegetation green but with considerable chlorosis (<50% chlorosis).
2.0 = Vegetation having >50% yellowing (chlorosis) of leaves and stems.
3.0 = Vegetation dead; no green aboveground tissue visible.
Note: Vegetation Condition Index should be determined on live tissue only, unless all vegetation is dead (Vegetation Condition Index = 3.0).
- Sediment Surface Oiling Coverage:** estimate of percentage of visible oiled sediment observed.
- Vegetation Oiling Extent Index-On This Season's Growth:** To be performed on this season's growth vegetation
NA = No vegetation in plot.
0 = No oil evident anywhere in the plot.
0.5 = Oil intermittently present on plant stems.
1.0 = Oil present on 5%-25% of plant stems.
2.0 = Oil present >25%-50% of plant stems.
3.0 = Oil present on > 50% of plant stems.
Note: Oiling Index should be determined by the presence/absence of oil observed on a percentage of stems within the plot, not by oiling degree
- Oiling Height-On This Season's Growth:** Highest point of observed oil on the stem of this year's growth. Recorded in cm. For laid over vegetation, if vegetation can be stood up, oiling height should be measured from base of stem to the highest point observed on stem. If vegetation is heavily oiled and cannot be stood up or is oiled stubble, enter HO (heavily oiled) instead of measurement. If there is new growth but no oiling, enter '0.' If there is no new growth, circle 'NA.'
- Total Live Cover:** Estimate of percentage of LIVE vegetation cover observed within the plot.
- Total Dead Cover:** Estimate of percentage of DEAD vegetation cover (brown leaf matter) observed within the plot.
- Total Vegetative Cover:** Estimate of percentage of ALL vegetative cover observed within the plot - should be the sum of lines 11 & 12
- Wrack Cover:** estimate of percentage of vegetative wrack cover within the plot.
- Photos:** 45°: collect from transect looking toward the plot; 90°: collect looking downward above plot. Photos should be obtained prior to disturbing plot area. A white board should also be employed with the following information: Site ID, Plot ID, and Date. White board should always be placed in lower left hand corner of plot for consistency. *Note: Photos should be obtained utilizing a camera with a minimum of 10 mp resolution.*
- Waypt** Record GPS waypoint at each plot.
- Debris Cover:** Estimate of percentage of debris cover within the plot - boards, trash, etc.
- Boom Cover:** Estimate of percentage of boom cover within the plot if present.
- Dominant Species Avg. Live Canopy Height:** Average LIVE CANOPY height of DOMINANT species in centimeters. Note: not total height measurement; does not include inflorescence. Record the height only in this field; note the dominant species in the appropriate field in the *Cover by Species* section (see line 20 below). If there is no live cover, write 'NA.'
- Vegetation Stature:** ST=standing, LO=laid over. If there is 0% vegetative cover, write 'NA.'
- Cover by Species:** Identify each species with an estimation of percentage of live and dead cover relative to the entire plot. Note: acceptable to be >100% due to overlapping species within canopy. This percentage should be absolute cover and may also be greater than total cover -Ex: total live cover = 60%, species A = 50%, species B = 15%. Note the dominant species with an X in the "Visibly Dominant Species" column. This species should be the one used for obtaining the metric in line 18 (dominant species average live canopy height). Use blank rows to add species additional to those preprinted. If a species is not present, enter a "0" for the "Live Cover" and "Dead Cover" metrics.

Herbaceous Marsh Sample Collection Datasheet (Fall 2012 – v4)

1. **Team Number:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #: Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time plot sampled; time should not be the same for all plots at the site. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
2. **Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
3. **Data Recorder:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation) Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
4. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliations-see line 3 for format.
5. **Habitat Type/Zone ID:** Consult Figure 1 and select the corresponding zone ID for habitat type. There will be one sample collection datasheet per zone.
6. **Water on Marsh:** Record water depth in centimeters-should be measured in the plot and represent an average water depth for the entire plot. If no water is on marsh, write NA for depth. *Note: No data can be collected if greater than 15 cm for Spartina and Mangroves. Data may be collected at depths greater than 15cm in Phragmites sites when safe to do so.*
7. **Photos:** Take photo of productivity plot. For general instructions, see line 15 under Herbaceous Marsh Cover Plot Datasheet (page 4 of 8).
Station Diagram: If there is no erosion noted in the Productivity Plot, place an 'X' in the lower right-hand subplot to indicate that samples were taken as illustrated on the diagram. If partial erosion of the Productivity Plot has occurred, follow the guidance and flow chart on pages 6-7.
- 8-17. **Sample Collected:** Indicate whether or not the sample was collected.
Time: Enter the time at which the sample was collected. Time should be entered in 24hr format with a colon. Example 1 pm should be 13:00.
Grid Code: NRDA sample grid. Grid code may be entered once for all samples collected.
YearDate: Year letter (A=2010, B=2011, C=2012) and mddd. YearDate may be entered once for all samples collected.
Matrix: Matrix letter (Tissue=T and Soil=L). This field is prelisted for all samples.
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification. This code may be entered once for all samples.
Site ID: Site number to be referenced for samples. This ID may be entered once for all samples and should be entered as a 4 digit number (add leading zeros if needed).
Plot Type: Productivity or cover plot. This field is prelisted for all samples.
Zone ID: Zone location (from line 5). This ID may be entered once for all samples.
Sample Type: Each sample type is prelisted on the sample collection table and explained in the notes below the table. The sample types are also depicted on the data sheet figures (and Figure 2 below) for both the cover plot and productivity plot along with their collection location in reference to the paired plots and transect.
Sample Depth: The proper sample collection depth is prelisted in each cell for the corresponding sample type. Please ensure that the samples have been collected from the appropriate depths as indicated by measuring the recovery from each sample collection location or core.
Core Type: Circle the type of corer used in obtaining the sample.
Summary Notes: for Fall 2012, the following samples should be collected utilizing the specified devices or methods as indicated on datasheet diagrams:
C = Clip-clip aboveground material from designated subplot using 0.5 x 0.5 m PVC frame and double bag sample
B = Belowground Biomass-16 cm stainless steel sampler or Russian Peat Corer (Phragmites)-30 cm depth. Extrude sample into Ziploc or plastic storage bag.
SCP= Soil Core-Physical Characterization-7.2 cm aluminum sample tube or Russian Peat Corer (Phragmites)-10 cm depth (collect from each plot type as indicated). Extrude sample into Ziploc storage bag.
SCC = Soil Core-Chemical Characterization-7.2 cm aluminum sample tube or Russian Peat Corer (Phragmites)-10 cm depth (collect from each plot type as indicated). Extrude sample into Ziploc storage bag.
SS = Soil Scoops (collected as indicated on datasheet diagram utilizing a gloved hand-2 cm depth). Place into glass jars.
18. **No. Live/Dead Stems:** For Phragmites sites where a C sample is taken, determine number of live and dead stems in clip sample. Otherwise, write NA in the blanks.
19. **Photos:** Collect one photo of each below ground biomass sample recovery (will be one per productivity plot at Spartina sites and two per productivity plot at Phragmites sites). A white board should also be depicted in the photo with the following information: Site ID, Date, & Plot ID.

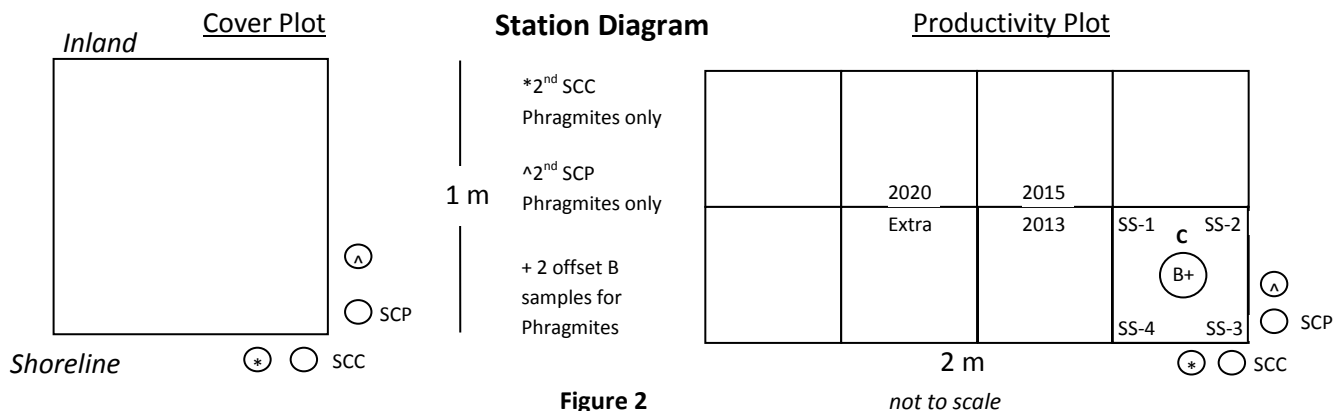
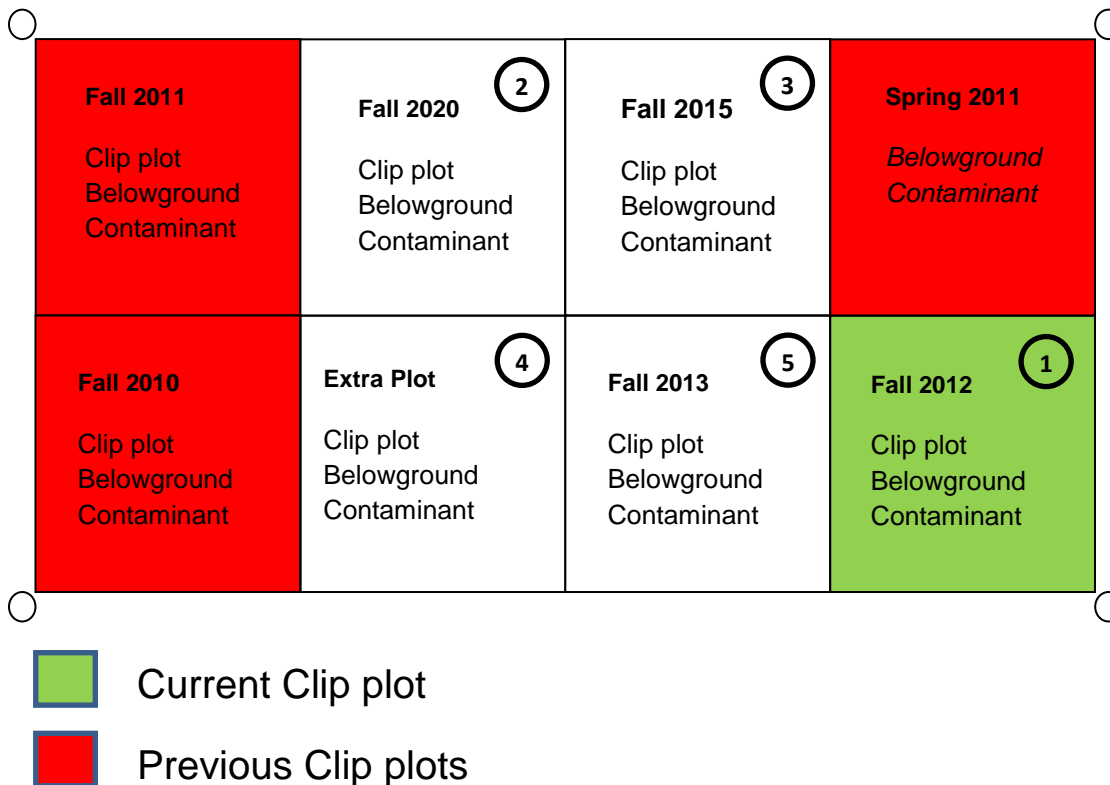


Figure 2

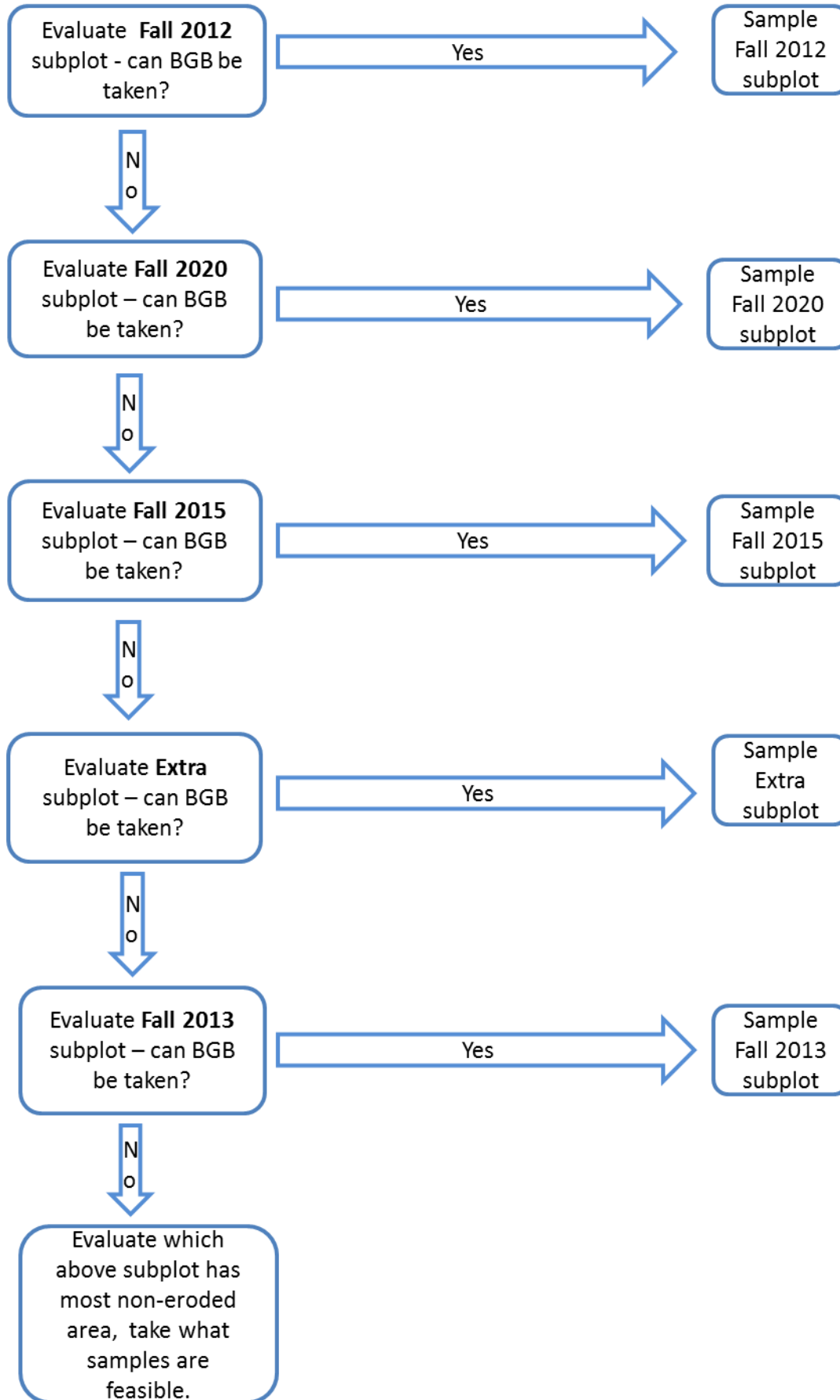
Herbaceous Guidance: Productivity Sampling in Eroded Plots (Fall 2012 – v4)

1. If the 2012 productivity subplot is partially eroded, samplers should determine whether they can take a fully intact below ground biomass (BGB) core. Samplers may be able to visually inspect. In addition, samplers have a plywood disk that is slightly larger in diameter than the BGB corer. That disk can be laid down as a gauge for the BGB core. If the BGB core can be taken, all samples should be collected as feasible. The soil scoops should be collected in the designated corners of the subplot. If a corner has eroded, do not move the soil scoop location to collect that scoop. Therefore, fewer than 4 soil scoops may be taken. The SCP and SCC cores should be taken in the designated areas, but can be moved within the designated limits of the 2012 subplot if those locations have eroded.
2. If the 2012 productivity subplot is not viable (BGB core cannot be collected), the subplot should be relocated to the productivity subplot designated for 2020 (center left subplot on the inland row). If the 2020 subplot is partially eroded, use the guidance in #1 to determine whether a BGB core can be taken, as well as other samples. Samplers should note the new location in the notes section. If the BGB core is viable, collect all samples per the field sampling protocol. The SCC and SCP cores should be taken outside of the subplot along the inland edge of the 2020 subplot. If there is limited non eroded surface to collect the SCC and SCP cores, priority should be given to the SCC core.
3. If the 2020 productivity subplot is not viable (BGB core cannot be collected), there are 3 additional subplots available for sampling: the 2015 subplot, the 'extra' subplot not designated for a particular year, and the 2013 subplot. Samplers should evaluate the 2015 subplot per guidance in #1 and collect samples, if feasible. If this plot is not viable, samplers should evaluate the 'extra' subplot per guidance in #1 and collect samples, if feasible. If this subplot is not viable, samplers then evaluate the 2013 subplot per guidance in #1 and collect samples, if feasible. If the BGB core cannot be collected in the 2013 subplot, samplers should evaluate the available subplots (2012, 2020, 2015, 'extra', 2013) and identify the subplot with the greatest non eroded surface area. Samples (other than the BGB core) should be collected from this subplot. The guidance in #1 provides clarification on collection of samples aside from the BGB core in partially eroded subplots.
4. Samplers should state which productivity subplot (e.g. 2012, 2015) is used in the notes section. Samplers should also draw an 'X' in the subplot on the station diagram on the sample collection datasheet. Samplers should draw in locations of the collected samples.

Productivity Plot



Herbaceous Guidance: Productivity Sampling in Eroded Plots Flow Chart(Fall 2012 – v4)



Equipment Checklist

Forward Team + Data Collection Team Checklist

- _____ Clipboard
- _____ Write-in-the-rain Pens
- _____ 50 m measuring tape
- _____ Small metric tape measure or level rod
- _____ Compass
- _____ Book with site set-up sheets
- _____ PVC -10' long, 1¼" wide (at least 3 per site)
- _____ PVC -10' long, ¾" wide (12 per site)
- _____ Pole driver
- _____ Flagging tape (arctic grade)
- _____ Hand saw
- _____ Multi tool
- _____ Sharpies
- _____ 1 m quadrats (3)
- _____ ½ x ½ m quadrat
- _____ Boot covers (1 pair per person per site)
- _____ Trash bags or drum liners
- _____ Quick Reference Guide
- _____ Trimble Geo XH
- _____ Camera
- _____ Spot tracker
- _____ 700 MHz radio
- _____ 700 MHz radio charger
- _____ VHF radio
- _____ VHF radio charger
- _____ Personal flotation device
- _____ Extra batteries (AA, AAA lithium, and other types as needed)
- _____ Wooden stakes (for Refuge property)
- _____ Permits and safety forms
- _____ Vessel safety checklists

Data Collection Team Only Checklist

- _____ White board
- _____ Dry erase markers
- _____ Datasheets
- _____ Waterproof labels
- _____ Map book with GPS coordinates and sample grid ID
- _____ Tyvek suits and other safety gear
- _____ Nitrile gloves
- _____ Stainless steel below-ground biomass sampler with extruder, cap, and clamps
- _____ Shovel
- _____ Trowel
- _____ 8 oz. wide mouth sample jars
- _____ 1 and 2 gal. Ziploc bags, black contractor, and white kitchen garbage bags
- _____ 7.2 cm aluminum corer with cap, extruder, and metal file
- _____ Single hand clippers
- _____ Coolers
- _____ Heavy duty paper towels and decontamination supplies
- _____ DI water (laboratory grade)
- _____ Russian peat corer
- _____ Alconox
- _____ 2 spray bottles
- _____ 5 gallon bucket
- _____ Compass
- _____ Scissors
- _____ Tape – clear and duct
- _____ Stadia Rod
- _____ Stainless steel meter stick
- _____ Work/Kevlar gloves
- _____ Enclosed eye goggles
- _____ Hip/chest waders
- _____ Toothbrush

Coastal Wetland Vegetation Plan Data/Sample Collection Quick Reference Guidance – Mangrove

Plan ID: Assessment of MC252 Oil Impacts to Coastal Wetland Vegetation

General Coastal Vegetation Assessment Guidance

1. **Planning and Logistics**

The day's sites, launch times, and intake locations will be posted on the NRDA Field Ops Marsh Team Tracking Whiteboard.

2. **NRDA Field Operations Safety Information**

At beginning of day, be sure to check in with NRDA Field Ops on the 700 mhz radio or by cell phone notifying ICP when on water. Turn spot tracker on by depressing the on button (top button) until it blinks green. Then depress and hold the "bootprint" button until it blinks green. When done properly, the GPS light will blink green intermittently and the "sent" light will begin blinking green momentarily. **ONLY USE LITHIUM BATTERIES IN SPOT TRACKERS.** Be sure to notify NRDA Field Ops of any changes to the personnel onboard prior to departing dock. Call in to NRDA Field Ops for a mid-day check and when off water. This is your float plan; any deviations from this instruction will result in a USCG violation and breach of standard safety protocol for the entire project. Please complete a "Daily Safety Vessel Checklist" for each boat. If any of the listed safety items are not present or if the registration number provided by Field Ops does not match the registration number on the vessel, please call NRDA Field Ops (504-303-2086) prior to the commencement of operations. Take a photograph of the registration number on the side of the boat.

3. **GPS Logs**

All field teams should have at least one Garmin Map 76 or Map 60 assigned. Before leaving the dock, turn on your GPS. Once satellite signal has been acquired, take a picture of your location screen with time (collect two photos if not on same screen). Clear unit of all previous way points or tracks, then turn on track log. Your GPS will be given to data intake for download of your daily activity. *Note: GPS operation is a Trustee function.*

4. **Data Intake**

Data intake personnel will download files from all electronic equipment (GPSs and camera) along with the scanning of the original datasheets produced in the field. **All information and samples will be relinquished to the sample intake crews under proper chain-of-custody documentation.** Following data upload, the data intake team will supply each member of the team with an electronic copy of the transfer to be placed on a USB thumb drive. If no data are collected by a sample team, no approach photos need be taken and no datasheet filled out unless site is not sampled due to erosion. Information about why the site was unable to be sampled should be included in the team's daily summary to Field Ops. Data intake personnel will provide guidance as to laboratory destination and specific analyses to be performed.

Specific Datasheet Guidance:

Post Hurricane Isaac Recon Datasheet (Fall 2012 – v3)

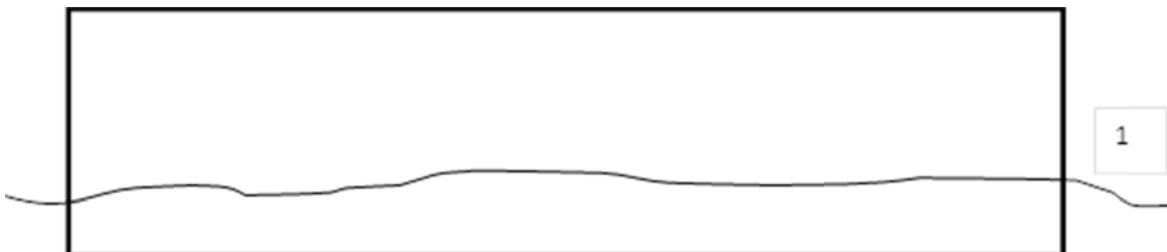
Note: Upon reaching a transect, the forward teams will complete this datasheet. This is the only datasheet that forward teams will complete. Previously completed "Site Visit/Set-Up" datasheets are provided in a booklet to each team for reference.

1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time site set-up was verified. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
Site ID: Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
2. **Data Recorder/Affiliation:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
3. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 2 for format.
4. **Vegetation Transect Markers:** Note the presence or absence of the shoreline and inland stake and whether or not the absent stake was replaced. If the stake was present, indicate 'NA' for its replacement. If the inland PVC stake is missing, it should be replaced; if the initial shoreline stake is missing, it will not be replaced. Place an additional PVC stake topped with a "T" junction and wrapped twice with black electrical tape within one foot of the stake top at the current marsh edge to mark the Fall 2012 marsh edge and leave in place. If the Fall 2012 marsh edge is exactly in the same location as the original shoreline stake, and the original shoreline stake is still present, then place the Fall 2012 marsh edge stake directly adjacent to the original shoreline stake on the transect. Use this stake for determining the Fall 2012 marsh edge coordinates (line 8). Consult the original "Site Visit/Set Up Datasheet" to determine the appropriate bearing from the inland PVC stake to the interface with the marsh edge where the Fall 2012 marsh edge stake is to be placed (see line 6). Note that bearings were recorded from the Shoreline PVC stake to the Inland PVC stake. Therefore teams will need to add 180° if the bearing is between 0° and 180° and subtract 180° if the bearing is between 180° and 360° (see line 7) to correctly place the Fall 2012 marsh edge stake.
5. **Station Markers:**
 If all PVC stakes at a plot are missing due to erosion then that plot cannot be re-established. For all plots missing PVC stakes due to a factor other than complete erosion (storms, vandalism, etc.), the position of the front left PVC stake will be verified using a Trimble GPS unit (provided in booklet). If the front left PVC stake is missing, then it should be re-established using a Trimble GPS unit. If other PVC stakes marking plots are missing, then see below.
 - a. After the position of the front left PVC stake has been verified, and if 1 or more other PVC stakes are present, then any other missing PVC stakes can be replaced using the appropriately-sized quadrat.
 - b. If no other PVC stakes are present, then the missing PVC stakes should be replaced using the verified front left PVC stake in conjunction with an appropriately sized quadrat, the RTK coordinates of the plot centers (can be multiple coordinates of 1m x 1m subplots for mangrove plots; all coordinates provided in booklet), and visual evidence of previous belowground biomass, physical and chemical core (always immediately outside intensively-sampled 1m x 1m plot) sampling locations, also provided in the booklet.
6. **Bearing to Inland Stake:** Record this value from the Site Set-Up datasheet.
7. **Bearing Inland Stake to Shoreline Stake:** Calculate this value by adding 180° to line 6 if the bearing is between 0° and 180° or subtracting 180° from line 6 if the bearing is between 180° and 360°.
8. **Fall 2012 Marsh Edge Coordinates:** Use a Trimble GPS unit to record the Fall 2012 marsh edge stake coordinates. Record a waypoint at the stake.
9. **Transect Length:** Record this value from the Site Set-Up datasheet.
10. **Distance from Inland Stake to Marsh Edge:** Distance should be recorded in meters.
11. **Greater than Trace Oil Beyond Inland Stake:** Note whether or not more than trace oil is observed at the site inland from the inland stake.
12. **Site Diagram:** Use the site diagram template to draw in the current shoreline relative to the locations of the plots. If part of a plot is eroded, indicate that by drawing the appropriate location of the current marsh edge with the respective box.

Note: directions for all photographs are from the photographer's perspective.

13. **Photos: Upon arrival:** Note the photo number(s) for each of the two types of photos to be taken upon arrival.
14. **Photos: During post-storm recon:** Note the photo numbers(s) for each of the seven types of photos to be taken during post-storm monitoring.

Example of marsh edge drawing. In this case, the pre-printed box for a zone 1 mangrove site has a drawing indicating the current marsh edge is within the plot.



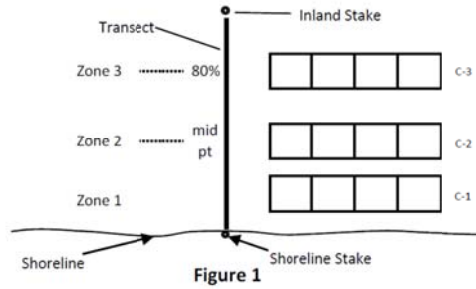
Site Set-Up Verification Datasheet (Fall 2012 – v3)

Note: Upon reaching a transect, the “Coastal Wetland Vegetation Plan – Site Set-Up Verification” datasheet should be completed first. Previously completed “Site Visit/Set-Up” datasheets are provided in a booklet to each team for reference.

1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time site set-up was verified. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
 2. **Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
 3. **Data Recorder/Affiliation:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
 4. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 3 for format.
 5. **Vegetation Transect Markers:** Note the presence or absence of the initial shoreline, initial inland, and Fall 2012 marsh edge stake. If the stake was present, indicate NA for its replacement. If the initial shoreline stake is missing, it will not be replaced. If either the initial inland or Fall 2012 marsh edge stake is missing and the team has a Trimble unit, replace the stake. If for any reason, either of these two stakes are not replaced, note that in the logbook.
 6. **Station Markers:**
 For any plot, if 1 or 2 PVC poles that mark the plot are missing, then replacement PVC poles should be employed to re-mark plots fully.
 For any plot, if 3 PVC poles that mark the plot are missing, then replacement PVC poles should be carefully employed to re-mark plots fully according to the following constraints. Plots must be carefully re-established in such a fashion that they do not include former areas of destructive sampling, such as soil core collection or walk paths outside of the plot. Consult the “Site Visit/Set Up Datasheet” to verify distances as appropriate.
 If all the PVC poles marking a plot are missing, then see below.
 - a. If PVC poles are missing due to erosion then this plot cannot be re-established.
 - b. If PVC poles are missing due to factors other than erosion (e.g., vandalism) and there is clear evidence of the location of the plot (e.g., markings from PVC poles or previously collected cores), then the plot should be re-established in the same location.
 - c. If PVC poles are missing due to factors other than erosion (e.g., vandalism) and there is not clear evidence of the location of plot, then the plot should be revisited with a Trimble GPS and reestablished using coordinates provided by NRDA Field Ops, previous Site Set-Up datasheets, and the GPS as a guide.
 If a plot is submerged or partially submerged, it should be sampled to the extent feasible and should not be re-established at a different location. Any signs of erosion should be noted on the datasheets and in the field notebook. If the water depth exceeds 15 cm, the site should not be sampled. Rather, the water depth should be recorded in the logbook, no datasheets should be filled out, and the site should be revisited when the water level is lower.
 Enter a number value from 0-4 for the number of absent and replaced stakes; because all mangrove plots were established, do not enter NA for any of these blanks.
 7. **Bearing to Inland Stake:** Record this value from the Site Set-Up datasheet.
 8. **Bearing Inland Stake to Shoreline Stake:** Calculate this value by adding 180° to line 6 if the bearing is between 0° and 180° or subtracting 180° from line 6 if the bearing is between 180° and 360°.
 9. **Transect Length:** Record this value from the Site Set-Up datasheet.
 10. **Distance from Inland Stake to Marsh Edge:** Distance should be recorded in meters.
 11. **Oil Distribution:** Circle the appropriate oil distribution based on the surface area coverage of the oil. If no oil was observed beyond the inland stake, circle NA. Consider an area approximately 10m on either side of the transect to the farthest inland point of observed oil or 20 m inland of the inland stake, whichever is closest to the inland stake.
 12. *Note: if no oil or trace oil (<1%) was observed beyond the inland stake, write NA for the following fields.*
Distance from Inland Stake: Record the distance parallel to the transect of the inland stake to the farthest inland point of observed oil. This measurement should be made along the transect. If farthest inland point of observed oil is beyond 20 m inland of the inland stake, write ‘>20’.
Photos: Take at least 2 photographs of the observed oiling and record the photograph numbers.
Waypoint: Take a waypoint at the farthest inland point of observed oil.
- Note: directions for all photographs are from the photographer’s perspective.*
13. **Photos: Upon Arrival:** Note the photo number(s) for each of the two types of photos to be taken upon arrival.
 14. **Photos: During Data Collection:** Note the photo numbers(s) for each of the six types of photos to be taken during data collection.
 15. **Photos: Upon Departure:** Note the photo numbers(s) for each of the two types of photos to be taken upon departure.

Mangrove Marsh Cover Plot Datasheet – 1m x 4m (Fall 2012 – v3)

1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #.
Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time plot sampled; time should not be the same for all plots at the site. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
2. **Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
3. **Data Recorder:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
4. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 3 for format.
5. **Habitat Type/Plot ID:** Consult Figure 1 and select the corresponding plot ID for habitat type. There will be one cover plot data sheet per zone.

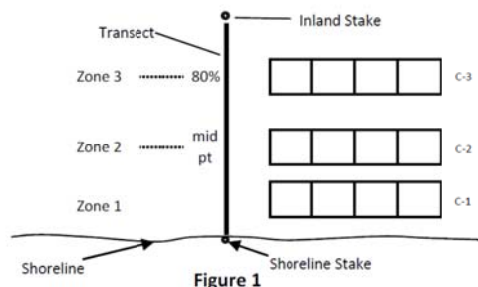


Note: all transect lengths are 20 m.

6. **Water on Marsh:** Record water depth in centimeters-should be measured in the plot and represent an average water depth for the entire plot. If no water is on marsh, write NA for depth. *Note: No data can be collected if greater than 15 cm.*
7. **Mangrove Vegetation Condition Index - Adults:** mangrove adults are classified as plants ≥ 50 cm in height.
NA = No vegetation in plot.
0 = Vegetation having a natural appearance, stem/leaf chlorosis not exceeding a slight mottling or occasional yellowing as observed in reference plots.
0.5 = Vegetation having an intense speckled chlorosis.
1.0 = Vegetation green but with considerable chlorosis (<50% chlorosis).
2.0 = Vegetation having >50% yellowing (chlorosis) of leaves and stems.
3.0 = Vegetation dead; no green aboveground tissue visible.
Note: Vegetation Condition Index should be determined on live tissue only, unless all vegetation is dead (Vegetation Condition Index = 3.0).
8. **Mangrove Vegetation Condition Index – Seedlings:** mangrove seedlings are classified as plants <50cm in height. Refer to line 7 for index key.
9. **Dominant Herbaceous Vegetation Index:** Refer to line 7 for a description and key for this index.
10. **Sediment Surface Oiling Coverage:** Estimate of percentage of visible oiled sediment observed.
11. **Adult (≥ 50 cm) Tree Veg. Oiling Extent Index:**
NA = No vegetation in plot.
0 = No oil evident anywhere in the plot.
0.5 = Oil intermittently present on plant stems.
1.0 = Oil present on 5%-25% of plant stems.
2.0 = Oil present >25%-50% of plant stems.
3.0 = Oil present on > 50% of plant stems.
Note: Oiling Index should be determined by the presence/absence of oil observed on a percentage of stems within the plot, not by oiling degree.
12. **Seedling (<50cm) Tree Veg. Oiling Extent Index:** Refer to line 11 for a description and key for this index.
13. **Total Live Cover:** Estimate of percentage of LIVE vegetation cover observed within the plot.
14. **Total Dead Cover:** Estimate of percentage of DEAD vegetation cover (brown leaf matter) observed within the plot.
15. **Total Vegetative Cover:** Estimate of percentage of ALL vegetative cover observed within the plot - should be the sum of lines 13 & 14.
16. **Wrack Cover:** Estimate of percentage of vegetative wrack cover within the plot.
17. **Debris Cover:** Estimate of percentage of debris cover within the plot-boards, trash, etc.
18. **Photos:** 45° L: collect with back against transect; 45° R: collect facing transect. Photos should be obtained prior to disturbing plot area. A white board should also be employed with the following information: Site ID, Plot ID, and Date. White board should always be placed in lower left hand corner of plot for consistency. *Note: Photos should be obtained utilizing a camera with a minimum of 10 mp resolution.*
Waypt: Record GPS waypoint at each plot.
19. **Boom Cover:** Estimate of percentage of boom cover within the plot if present.
20. **Mangrove Avg Live Canopy Height (cm):** Average CANOPY height of MANGROVE species in centimeters. *Note: not total height measurement; does not include inflorescence.* If there are no mangroves in the plot, write NA.
21. **Dominant Herbaceous Species Avg. Live Canopy Height:** Average LIVE CANOPY height of DOMINANT HERBACEOUS species in centimeters. *Note: not total height measurement;* Record the height only in this field and note the dominant herbaceous species in the appropriate field in the *Cover by Species* section (see line 19 below). If there is no herbaceous cover in the plot, write NA.
22. **Herbaceous Vegetation Stature:** ST=standing, LO=laid over (specifically for Spartina dominated plots). If no herbaceous cover in plot, write NA.
23. **Maximum Live Tree Height:** Measured from sediment surface to tip of the tallest living leaf. If there are no mangroves in plot, write NA.
- 24+ **Cover by Species:** Identify each species with an estimation of percentage of live and dead cover relative to the entire plot. *Note: acceptable to be >100% due to overlapping species within canopy.* This percentage should be absolute cover and may also be greater than total cover-Ex: total live cover = 60%, species A = 50%, species B = 15%. Note the dominant herbaceous species with an X in the "Visibly Dominant Herbaceous Species" column. This species should be the one used for obtaining the metric in line 21 (dominant herbaceous species average live canopy height). Use blank rows to add species additional to those preprinted. If a species is not present, enter a "0" for the "Live Cover" and "Dead Cover" metrics.

Mangrove Plot Datasheet – 1m² (Fall 2012 – v3)

- Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #. Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time plot sampled; time should not be the same for all plots at the site. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
- Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops. Clean-up sites have a dash (ex. B-01).
Sampler Team Code: Alphanumeric-provided by NOAA for analytical sample identification.
- Data Recorder:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation). Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
- Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliation - see line 3 for format.
- Habitat Type/Plot ID:** Consult Figure 1 and select the corresponding plot ID for habitat type. There will at least one plot datasheet per zone; supplemental sheets may be used to record additional tag numbers and associated data for live adults and seedlings.



Note: all transect lengths are 20 m.

- Oiling Height:** Highest point of observed oil on vegetation on the stem, recorded in centimeters. For laid over vegetation, if vegetation can be stood up, oiling height should be measured from base of stem to the highest point observed on stem. If vegetation is heavily oiled and cannot be stood up or is oiled stubble, enter HO (heavily oiled) instead of measurement. If there is new growth but no oiling, enter '0.' If there is no new growth, write 'NA.'
- Number of Pneumatophores:** Count of all pneumatophore within entire 1m² plot. Pneumatophore may be present in 100% Spartina sites.
- Pneumatophore Avg Height:** Average height of observable pneumatophores within entire 1m² plot.
- Propagule Production Estimate:** Visually estimate the number of propagules present: <100, 100-500, 500-1000, >1000
- Live Adult Trees (≥50 cm in height):** All trees with attached prestamped aluminum tags in the plot should be identified. This tag should be on the main stem immediately above the first branch or node from the sediment surface. Record the Tag No., Live-Dead-New-Missing status, Height (of individual tree), Main Stem Diameter (at 10 cm height), Canopy Diameter (measure largest diameter from outer leaf to outer leaf then perpendicular measurement), Number of Live Primary Branches (off main stem), and Number of Dead Primary Branches (off main stem). If tree is dead or tag is missing, record only the Tag No. and Live-Dead-New-Missing status. Use the tallest stem as the main stem. If more rows are needed to record all live adult trees in the plot, continue on page MSupp1, the Supplemental Adult datasheet and circle 'Yes' for line 11.
- Mangrove Plot Supplemental Adult Datasheet Completed for this plot:** If the Supplemental Adult datasheet was used as a continuation to this datasheet, circle 'Yes.' If the Supplement Adult datasheet was not needed, circle 'No.'
- Live Seedlings (<50 cm in height):** As with adult trees, prestamped aluminum tags with aluminum wire should be located immediately above the first branch or node. If new seedlings have colonized the plot, then tag, circle 'New' in the Live-Dead-New-Missing column and collect all data as described below.
Record Tag No., Live-Dead-New-Missing status, Height (of individual tree), Main Stem Diameter (at 5 cm height), and Number of Leaves. On unbranched seedlings also measure Number of Main Stem Nodes and Main Stem Internodal Distance (measured from first node to highest node (not top of growth)).
If seedling is dead or tag is missing, record only the Tag No. and Live-Dead-New-Missing.
Note: For at least one tree and one seedling per plot, measurements will be independently generated by two team members. Both the original and duplicate measurement will be marked with "FD" before the Tag No.
If more rows are needed to record all live seedlings in the plot, continue on page MSupp2, the Supplemental Seedling datasheet and circle 'Yes' for line 13.
- Mangrove Plot Supplemental Seedling Datasheet Completed for this plot:** If the Supplemental Seedling datasheet was used as a continuation to this datasheet, circle 'Yes.' If the Supplement Seedling datasheet was not needed, circle 'No.'

Mangrove Marsh Sample Collection Datasheet – 1m² (Fall 2012 – v3)

1. **Team #:** Assigned by NRDA Field Operations for the purpose of radio communications and field assignments. The format should be state abbreviation-team #.
Example: LA-1
Date: mm/dd/yy
Time (24hr): Actual time plot sampled; time should not be the same for all plots at the site. Time should be recorded in 24hr notation – example: 1:00 pm should be recorded as 13:00. Louisiana observes daylight savings time. Please be aware of the time of year and time changes.
2. **Site ID:** Actual site number to be referenced on all datasheets and samples. Assigned by NRDA Field Ops.
Sampler Team Code: Alphanumeric or numeric-provided by NOAA for analytical sample identification.
3. **Data Recorder:** Trustee (state or federal representative) responsible for entering data on data sheet for that site. Enter name and affiliation following the format First Last (Primary Affiliation/Secondary Affiliation) Ex: Jane Doe (Shaw/CPRA/LA), John Doe (AIS/NOAA), Jim Doe (Cardno ENTRIX/BP)
4. **Other Team Members:** Include additional parties involved with data collection for that site. Enter name and affiliations-see line 3 for format.
5. **Habitat Type/Plot ID:** Consult Figure 1 and select the corresponding plot ID for habitat type. There will be one sample collection datasheet per plot.
Station Diagram: Place and 'X' in the correct location of the 1 m x 1 m intensive survey plot in the 1 m x 4 m mangrove plot. Follow the guidance provided on the next page (page 7) to determine the appropriate locations to collect samples relative to the 1 m x 1 m intensive plot. Draw in circles with relevant labels (SS-1, SS-2, SS-3, SS-4, B, SCP, SCC) on the station diagram to indicate where the samples were collected per the guidance on page 7.
- 6-12. **Sample Collected:** Indicate whether or not the sample was collected.
Time: Enter the time at which the sample was collected. Time should be entered in 24hr format with a colon. Example 1 pm should be 13:00.
Grid Code: NRDA sample grid. Grid code may be entered once for all samples collected.
YearDate: Year letter (A=2010, B=2011, C=2012) and mmdd. YearDate may be entered once for all samples collected.
Matrix: Matrix letter (Tissue=T and Soil=L). This field is prelisted for all samples.
Sampler Team Code: Alphanumeric or numeric-provided by NOAA for analytical sample identification. This code may be entered once for all samples.
Site ID: Site number to be referenced for samples. This ID may be entered once for all samples and should be entered as a 4 digit number (add leading zeros if needed).
Plot Type: Productivity or cover plot. This field is prelisted for all samples.
Zone ID: Zone location (from line 5). This ID may be entered once for all samples.
Sample Type: Each sample type is prelisted on the sample collection table and explained in the notes below the table. The sample types are also depicted on Figure 2 below, which illustrates a properly completed station diagram for a plot with a leftmost 1 m x 1 m intensive plot and no erosion. NO CLIP SAMPLES COLLECTED FOR MANGROVES.
Sample Depth: The proper sample collection depth is prelisted in each cell for the corresponding sample type. Please ensure that the samples have been collected from the appropriate depths as indicated by measuring the recovery from each sample collection location or core.
Core Type: Type of corer used in obtaining the sample.
Summary Notes: for Fall 2012, the following samples should be collected utilizing the specified devices or methods as indicated on datasheet diagrams:
B = Belowground Biomass-16 cm stainless steel sampler - 30 cm depth. Extrude sample into Ziploc or plastic storage bag.
SCP= Soil Core-Physical Characterization-7.2 cm aluminum sample tube - 10 cm depth (collect from each plot type as indicated). Extrude sample into Ziploc storage bag.
SCC = Soil Core-Chemical Characterization-7.2 cm aluminum sample tube - 10 cm depth (collect from each plot type as indicated). Extrude sample into Ziploc storage bag.
SS = Soil Scoops (collected as indicated on datasheet diagram utilizing a gloved hand-2 cm depth). Place into glass jars.
13. **Photos:** Collect one photo of the below ground biomass sample recovery. A white board should also be depicted in the photo with the following information: Site ID, Date, & Plot ID.
Waypoint: Record GPS waypoint at each plot.

Station Diagram

Inland

Shoreline

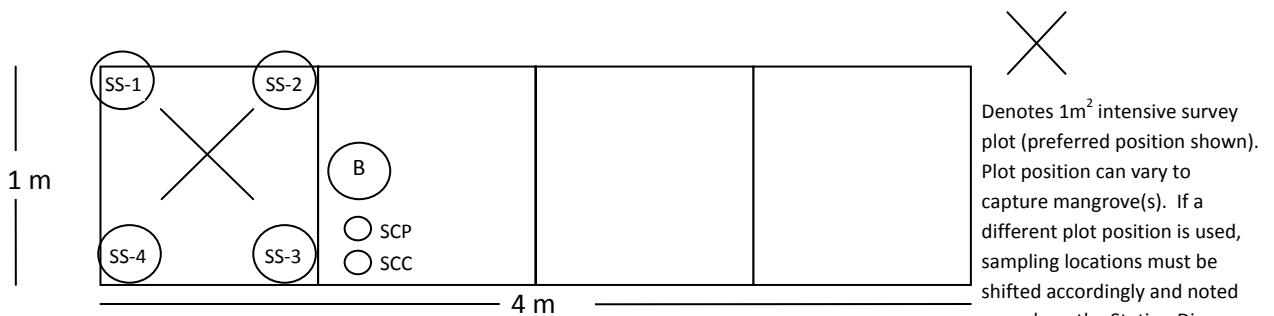


Figure 2

Mangrove Guidance: Sampling in Plots (Fall 2012 – v3)

1. Samplers should first determine whether they can take a fully intact below ground biomass (BGB) core based on sufficient non-eroded marsh, not previously cored or exposed to heavy foot traffic, to allow for filling the core diameter. If possible, samples should be taken on the right side of the mangrove-intensive plot looking inland (Figure 1). If not possible, the BGB coring location can be relocated as follows:
2. If the 2012 mangrove-intensive 1 m x 1 m plot is partially eroded,
 - a. If the mangrove-intensive plot is in location 1, 2, or 3 based on Figure 2, looking inland, the coring location can be moved to the **RIGHT** of the 1 m x 1 m mangrove-intensive plot **up to 0.5 m along the inland edge** of the 1 m x 4 m plot (see Figure 3). If there is still not sufficient non-eroded marsh for BGB coring, the location can be moved further to the **RIGHT** of the mangrove-intensive plot along the inland edge **up to a maximum distance of 1 m from the mangrove-intensive plot**. If the inland edge along the 1 m distance shows evidence of previous coring or heavy foot traffic such that a BGB core should not be taken, the sampling location can be moved to the inside of the 1 m x 4 m plot following the same lateral movement guidance of not exceeding the 1 m maximum distance from the intensive plot. Ensure that the sampling locations are clearly marked and labeled on the Station Diagram on the Mangrove Sample Collection Datasheet.
 - b. If the mangrove-intensive plot is in location 4 based on Figure 1, looking inland, the coring location can be moved to the **LEFT** of the 1 m x 1 m mangrove-intensive plot **up to 0.5 m along the inland edge** of the 1 m x 4 m plot (see Figure 3). If there is still not sufficient non-eroded marsh for BGB coring, the location can be moved further to the **LEFT** of the mangrove-intensive plot along the inland edge **up to a maximum distance of 1 m from the mangrove-intensive plot**. If the inland edge along the 1 m distance shows evidence of previous coring or heavy foot traffic such that a BGB core should not be taken, the sampling location can be moved to the inside of the 1 m x 4 m plot following the same lateral movement guidance of not exceeding the 1 m maximum distance from the intensive plot. Ensure that the sampling locations are clearly marked and labeled on the Station Diagram on the Mangrove Sample Collection Datasheet.
3. The soil **cores for physical (SCP) and chemical (SCC) analyses should be relocated to the same area** as the belowground core location. If there is not sufficient non-eroded marsh for both cores, **preference should be given to the SCC core**.
4. **Soil contaminant scoops should not be relocated**, but taken with the mangrove-intensive plot corners where there is non-eroded marsh. Therefore, it is possible that fewer than 4 scoops will be able to be collected. Soil contaminant scoops should be labeled following the standard guidance given in the Coastal Wetland Vegetation Plan and associated QRGs.
5. **All coring locations (whether relocated or not) should be clearly indicated on the 1 m x 4 m plot diagram as described on Page 6, Line 5.**
6. All other mangrove (non-coring) data collection should proceed as stated in the Coastal Wetland Vegetation Plan for mangroves within the established plot boundaries.

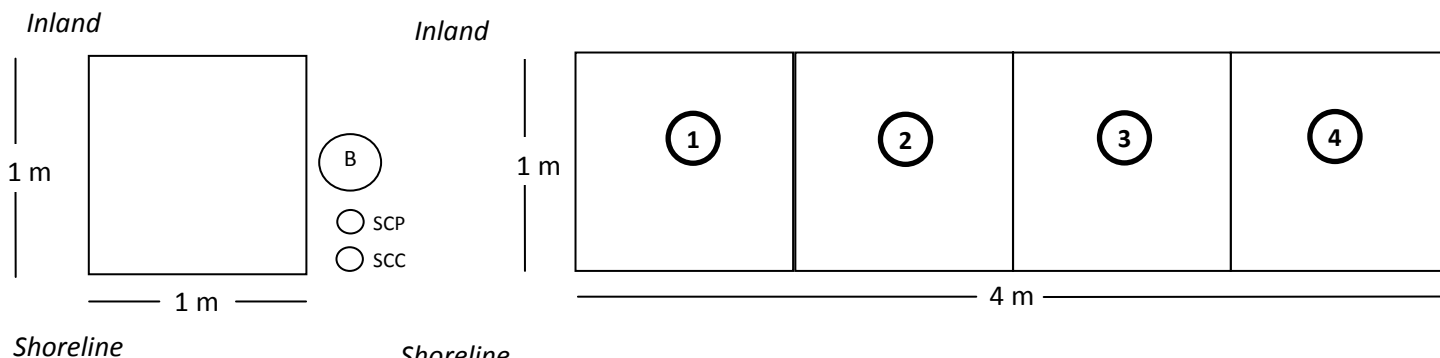


Figure 2: The four positions of the 1 m x 1 m mangrove-intensive plot. On the Station Diagram on the Mangrove Sample Collection Datasheet, place an 'X' in the position of the mangrove-intensive plot for that zone.

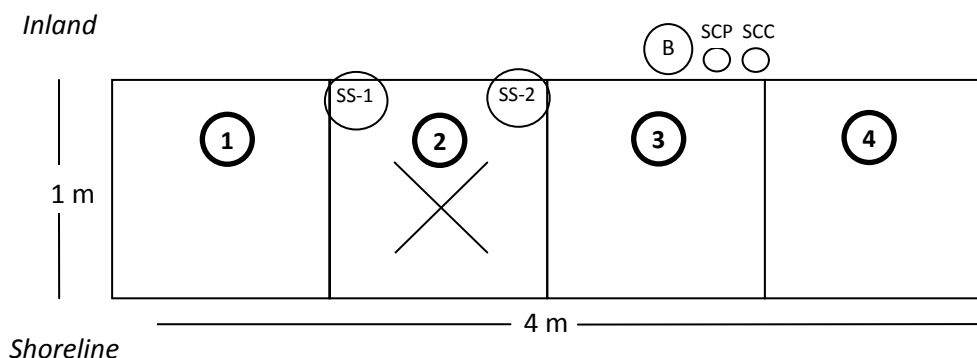


Figure 3: The location of core samples relative to 1 m x 4 m plot if partial erosion requires movement of core locations. This location assumes partial erosion of a mangrove-intensive plot located in position 2. Proper marking of the Station Diagram on the Mangrove Sample Collection Datasheet is also shown: the 'X' in the location of the mangrove-intensive plot and the locations of soil scoops that can be collected in the mangrove-intensive plot. In this case, because of erosion, only two soil scoops could be collected from the mangrove-intensive plot.

Equipment Checklist

Forward Team + Data Collection Team Checklist

- _____ Clipboard
- _____ Write-in-the-rain Pens
- _____ 50 m measuring tape
- _____ Small metric tape measure or level rod
- _____ Compass
- _____ Book with site set-up sheets
- _____ PVC-10' long, 1½" wide (at least 3 per site)
- _____ PVC-10' long, ¾" wide (18 per site for new set-up)
- _____ Pole driver
- _____ Hand saw
- _____ Flagging tape (arctic grade)
- _____ Sharpies
- _____ Multi tool
- _____ 1 m quadrats (4)
- _____ ½ x ½ m quadrat
- _____ Boot covers (1 pair per person per site)
- _____ Trash bags or drum liners
- _____ Quick Reference Guide
- _____ Trimble GEO XH
- _____ Camera
- _____ Spot tracker
- _____ 700 MHz radio
- _____ 700 MHz radio charger
- _____ VHF radio
- _____ VHF radio charger
- _____ Personal flotation devices
- _____ Extra batteries (AA, AAA lithium, and other types as needed)
- _____ Wooden stakes (for Refuge property)
- _____ Permits and safety forms
- _____ Vessel safety checklists

Data Collection Team Only Checklist

- _____ White board
- _____ Dry erase markers
- _____ Datasheets
- _____ Waterproof labels
- _____ Map book with GPS coordinates and sample grid ID
- _____ Tyvek suits and other safety gear
- _____ Nitrile gloves
- _____ Stainless steel below-ground biomass sampler with extruder, cap, and clamps
- _____ Shovel
- _____ Trowel
- _____ Field knife
- _____ 8 oz. wide mouth sample jars
- _____ 1 and 2 gal. Ziploc bags, black contractor, and white kitchen garbage bags
- _____ 7.2 cm aluminum corer with cap, extruder, and metal file
- _____ Coolers
- _____ Heavy duty paper towels and decontamination supplies
- _____ DI water (laboratory grade)
- _____ Alconox
- _____ 2 spray bottles
- _____ 5 gallon bucket
- _____ Scissors
- _____ Tape – clear and duct
- _____ Stadia Rod
- _____ Stainless steel meter stick
- _____ Toothbrush
- _____ Calipers (at least 2)
- _____ Aluminum tree tags/wire
- _____ Counters
- _____ Work/Kevlar gloves
- _____ Hip/chest waders
- _____ List of tag numbers at each site

Coastal Wetland Vegetation Plan Budget

version 4

12/6/2012

Year 2, Fall 2012

Labor ^{1,2}					
Position	Number	Rate (\$/hr)	Days	Hours	Cost
<i>Federal³</i>					
QA floater - forward/sampling (LA sampling)	1	\$150	75	11	\$123,750
Field team leads - forward (LA sampling)	3	\$150	12	11	\$59,400
Field team leads - sampling (LA sampling)	5	\$150	63	11	\$519,750
Field team staff - sampling (LA sampling)	5	\$100	63	11	\$346,500
Field team staff - sampling (AL sampling)	1	\$100	14	11	\$15,400
Field team leader - sampling (DOI representative for MS)	1	\$150	14	11	\$23,100
<i>Federal contractor labor costs</i>					
<i>State</i>					
Field crew (ADCNR/GSA)	4	\$100	11	11	\$48,400
Field chief (ADCNR/GSA leads)	2	\$150	14	11	\$46,200
Field crew (MS)	2	\$100	14	11	\$30,800
Field chief (MDEQ lead)	2	\$150	16	11	\$52,800
LA labor (see Attachment 1 for details)					\$617,319
<i>State labor costs</i>					
Labor Total					\$1,883,419

¹ All NOAA and State Trustee labor costs are recoverable under NRDA but are not calculated here, other than AL and MS field sampler costs specified above.

² Includes time for HAZWOPER and CPR/First Aid courses and the field training session.

³ All federal costs are NOAA's unless otherwise specified.

Laboratory Costs			
	Number	Rate (\$/sample)	Cost
Aboveground clips	375	\$650	\$243,750
Belowground cores	465	\$400	\$186,000
Soil cores - physical and chemical	926	\$600	\$555,600
PAH analysis	526	\$1,000	\$526,000
Lab Costs Total			\$1,511,350

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Travel					
	Unit	Rate (\$/unit)	Days	Number	Cost
<i>Federal</i>					
Meals - QA floater - forward/sampling (LA sampling)	day	\$71	75	1	\$5,325
Lodging - QA floater - forward/sampling (LA sampling)	day	\$135	75	1	\$10,125
Meals - field team leads - forward (LA sampling)	day	\$71	12	3	\$2,556
Lodging - field team leads - forward (LA sampling)	day	\$135	12	3	\$4,860
Meals - field team leads - sampling (LA sampling)	day	\$71	63	5	\$22,365
Lodging - field team leads - sampling (LA sampling)	day	\$135	63	5	\$42,525
Meals - field team staff - sampling (LA sampling)	day	\$71	63	5	\$22,365
Lodging - field team staff - sampling (LA sampling)	day	\$135	63	5	\$42,525
Meals - sampling (AL sampling)	day	\$51	14	1	\$714
Lodging - sampling (AL sampling)	day	\$100	14	1	\$1,400
Meals - sampling (DOI representative for MS)	day	\$56	14	1	\$784
Lodging - sampling (DOI representative for MS)	day	\$94	14	1	\$1,316
Airplane - forward/sampling (LA and AL sampling)	trip	\$500	N/A	30	\$15,000
Airplane (DOI representative for MS)	trip	\$700	N/A	1	\$700
<i>Federal contractor travel costs</i>					
<i>State</i>					
Overnight Per Diem-Meals & Lodging- AL Rate (GSA Staff)	day	\$75	11	3	\$2,475
Day Trip Per Diem-AL Rate (ADCNR Staff)	day	\$11	14	3	\$473
Meals (MS)	day	\$56	18	4	\$4,032
Lodging (MS)	day	\$94	18	4	\$6,768
Airplane (MS)	trip	\$700	N/A	1	\$700
LA travel costs (see Attachment 1 for details)					
<i>State travel costs</i>					
Travel Total					
					\$317,852

Coastal Wetland Vegetation Plan Budget

version 4

12/6/2012

Other Direct Costs				
	Unit	Rate (\$/unit)	Number	Cost
<i>Federal</i>				
Car rental	per day	\$100	755	\$75,500
Bay boat rental	per day	\$1,200	351	\$421,200
Air boat rental	per day	\$1,200	351	\$421,200
HAZWOPER training (24 hour)	per field person	\$200	30	\$6,000
CPR/First Aid certification	per field person	\$100	30	\$3,000
Shipping	per cooler	\$175	1,052	\$184,100
<i>Equipment⁴</i>				
Digital calipers	each	\$110	2	\$220
Biomass corer	each	\$150	2	\$300
Bulk density corer	each	\$150	2	\$300
Russian peat corer	each	\$1,200	2	\$2,400
Pocket knife/multi-tool	each	\$100	5	\$500
Non-disposable equipment (other)	per team	\$1,000	8	\$8,000
Sediment chemistry sampling jars	per sample	\$10	2,104	\$21,040
Other disposable supplies	per team, per year	\$1,500	8	\$12,000
<i>Federal ODCs</i>				\$1,155,760
<i>State</i>				
Car mileage - AL	per day	\$410	14	\$5,740
Boat rental (bay boat) - AL	per day	\$1,200	25	\$30,000
Car mileage - MS	per day	\$160	18	\$2,880
Boat rental (bay boat) - MS	per day	\$1,200	32	\$38,400
LA ODCs (see Attachment 1 for details)				\$58,614
<i>State ODCs</i>				\$135,634
ODCs Total				\$1,291,394

⁴ 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. Purchase of equipment will be on an as-needed basis, and not all equipment noted above may need to be purchased.

Total Costs Year 2, Fall 2012	\$5,004,015
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Attachment 1

Louisiana Contract Labor/Equipment Costs for Impacts to Coastal Wetland Vegetation Plan

Year 2 Sampling - Fall 2012

Personnel	Hourly Rate	Estimated Man-Hours	Total Labor Cost
Project Manager/Coordinator (1-2)	\$135.00	440	\$59,400.00
Staff Scientist - Field (9)	\$65.00	5544	\$360,360.00
Senior Scientist - Field (2)	\$125.00	1300	\$162,500.00
Staff Scientist - Data (1)	\$65.00	132	\$8,580.00
Staff Geologist/Hydrogeologist (Procurement/Project Controls) (1)	\$79.00	236	\$18,644.00
Clerical	\$55.00	17	\$935.00
Senior GIS Support	\$115.00	60	\$6,900.00
Total Labor Cost			\$617,319.00

Equipment/Materials/Sub-contractors	Rate	Quantity	Total Cost
Communications (Staff/Sr Sci)(6)	\$10.00	396 Man-Days	\$3,960.00
Communications (Proj Mgr)(1)	\$10.00	96 Man-Days	\$960.00
Laptop Computer (2 hrs/day) (Staff/Sr Sci)(6)	\$15.00	792 Man-Hours	\$11,880.00
Mileage (2)	\$0.51	1000 Miles	\$510.00
Vehicle (Staff/Sr Sci)(6)	\$65.00	396 Man-Days	\$25,740.00
Fuel/Oil (Staff/Sr Sci)(11)	\$15.00	396 Man-Days	\$5,940.00
Field Supplies (Sr/Staff Sci) (11)	\$7.00	696 Man-Days	\$4,872.00
Sampling Supplies (Sr/Staff Sci) (6)	\$12.00	396 Man-Days	\$4,752.00
Lodging Tier II (11)	\$135.00	696 Man-Days	\$93,960.00
Per Diem Tier II (11)	\$54.00	696 Man-Days	\$37,584.00
Total Equipment Cost			\$190,158.00

Total Costs - Personnel and Equipment	\$807,477.00
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