Data Management Plan for Pisces Sediment Sampling

The objectives of this data management plan are the following:

1. Ensure that all pertinent location and sample metadata and descriptive information are captured, so that samples can be linked to station, location coordinates, depth, core, core segment, sample type, sample matrix, etc., (see Data Capture Forms).
2. Ensure that Sample IDs are unique and trackable from the vessel, through onboard analysis, through laboratory analysis back into a database(s), (see Sample Naming Convention).
3. Ensure that each sampling team follows the sample naming convention, which is based on BP's theatre-wide convention, (see Sample Naming Convention).
4. Ensure that each sampling team has control over its sample IDs while working within the required sample naming convention, (see Sample Naming Convention).
5. Allow the data manager to identify, assign and document core numbers based on a random approach, (see Random Core Identification Procedures).

Data Capture Forms

Data capture forms are contained in the Excel workbook entitled OV_Sediment_Data_Capture.xlsm. The following worksheets are included:

- Information – contains a list of the worksheets and contact information
- Locations_Data_Entry – Entry of station coordinates, depth, date sampled, and observed surface conditions
- Locations_Field_Descriptions – Descriptions and formats for each locations data field
- Sample_Data_Entry – Entry of SampleID, Core random numbers, Core and sample dimensions, sample descriptions and date and time information
- Samples_Field_Descriptions – Descriptions and formats for each samples data field
- Onboard_Lab_Results – Entry of GC/MS results and supporting information
- Lab_Results_Descriptions – Descriptions and formats for each lab results field
- MicroTox_Data_Entry – Entry of data transcribed from Excel or dbf instrument report
- MicroTox_Field_Descriptions -- Descriptions and formats for each microtox data field

The descriptions worksheets are sufficient to explain the formats and use of each of the fields. Some descriptions refer to this document for detailed information.

Sample Naming Convention

Sample ID nomenclature is:
(Matrix)-(Date)-(Vessel Code)-(Station Number)-(Analysis)-(Sample Number)

Matrix:

- SU for Supernatant Water
- SE for Sediment
- WQ for Distilled Water used for QA blank samples

Date: in form *YYYYMMDD* for date samples collected

Vessel Code: PC for PIsces

Station Number:

- Pre-defined stations (see table 1).
- Combination of the corridor and the location within the corridor.

Analysis:

- MF for Macrofauna
- ME for Meiofauna
- SP for sediment properties (grain size, total organic carbon, and total inorganic carbon)
- HC for on shore hydrocarbon analyses
- MT for on shore metals
- BT for on shore Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX)
- GC for off shore PAHs and other hydrocarbons by GC/MS
- MX for off shore microtoxicity
- VA for visual analysis and photography
- OT for other analyses not listed above
- NO for no analysis

Sample Number:
Sequential three-digit number starting with 001 for each analysis type for each day. Each sample team will control this part of the sample ID. Each data team with support from the data manager must ensure that no Sample IDs are repeated and that the sample ID submitted on the data form is the same as the sample ID on associated sample labels, chain of custody forms, onboard lab sheets, and/or sample logbook entries.

Distilled water samples may be equipment blanks, trip blanks, field blanks. The specific QA type will be identified in the SampleType database field.

Random Core Identification Procedures

The maxi-corer collects eight cores per drop. Each core carrier and each core tube will have an engraved identifier. These identifiers may be the letter P for Pisces followed by a number. Initially these numbers will be P1 through P8. If carriers or tubes need to be replaced, the replacement will be numbered P9, P10…. etc.

The core numbers are generated randomly for each station and each drop using the macro-enhanced Excel workbook, entitled PC_Core_Random_Number_Generator.xlsm. The data manager will use this workbook to allocate cores for each analytical group. Be sure that macro content is enabled. The data manager will run the macro and complete the worksheet called data_table for each station to provide cross-referencing of each sample to each core position, see Figure 1. The table includes identification of the station number, cast number, core position, core number, and sample ID(s) associated with each core. The core allocation by analytical function is shown in Table 2. These cores are listed in order of priority. If some of the cores are inadequate then the analyses of the lower items in Table 2 will be omitted. The macro automatically assigns core analytical allocations including inadequate cores.

The positions of the cores allocated by analyses is shown in the work called Diagram, see Figure 2. The core positions run clockwise starting in the one o'clock position.

The data manager will enter the station ID, as shown in Table 1, the drop, which will usually be 1, and the date. The core number will be the competent number of cores, which will be 8 or less. If the core number is less than 8, the macro will asks for the positions of inadequate cores and identify them in both worksheets.

After entering this information, the macro will be executed by clicking on the button called "Generate Random Core Positions". A new file named, *Station ID-Drop*.xlsm, will be generated in the same folder.

Photo identification

Three photos will be taken, and cataloged for each drop (one core per drop) and will be taken on a core used for another analysis. The photos files will be named as *Sample ID*-PIC *photo number*.jpg. For example, a photo file name for sample SE-20100922-OV-2-2-vaVA-001 may be SE-20100922-OV-2-2-VA-001-Pic2.jpg. Each photo will have a scale and placard showing the sample ID and picture number. The photo numbers will be as follows:

1. Flush view of core when first brought on deck
2. Top view of core with supernatant water in tact
3. Top view of core after supernatant water removed
4. Cross-section view (optional)

The photo files will be included as attachments in the daily deliverable. This same core will be used for onboard visual assessments of the supernatant and sediment but will not be handled and sniffed. The visual observations will be documented in the Samples_Data_Entry form.

Daily Deliverable

Daily deliverable will be sent to the following email address each day by midnight:

- SMUDWH@gmail.com
- EPADWH@gmail.com

The daily deliverable email will include:

1. Status Report
2. Photographs – three or four per station per drop
3. Field form workbook – including:
   3.1. Locations_Data_Entry
   3.2. Samples_Data_Entry Forms
   3.3. Lab_Results_Data_Entry
   3.4. Microtox_Data_Entry
4. Completed forms generated by Core_Random_Number_Generator.xlsm
5. Other files as available – may include maps, data evaluation reports etc.

Table 1. Station IDs, Coordinates and Depths

Station ID	Corridor	Station	Latitude	Longitude	Depth (m)
0-0	0	0	28.7381	-88.3659	
1-1	1	1	29.1549	-89.9034	
1-2	1	2	29.1177	-89.8760	
1-3	1	3	29.0420	-89.8202	
1-4	1	4	28.9662	-89.7645	
1-5	1	5	28.8905	-89.7089	
1-6	1	6	28.8147	-89.6534	
1-7	1	7	28.7799	-89.6278	
1-8	1	8	28.7452	-89.5940	
1-9	1	9	28.7444	-89.5338	
1-10	1	10	28.7450	-89.4916	
1-11	1	11	28.7448	-89.3893	
1-12	1	12	28.7444	-89.2870	
1-13	1	13	28.7440	-89.1846	
1-14	1	14	28.7435	-89.0823	
1-15	1	15	28.7430	-88.9799	
1-16	1	16	28.7424	-88.8776	
1-17	1	17	28.7417	-88.7753	
1-18	1	18	28.7409	-88.6729	
1-19	1	19	28.7400	-88.5706	
1-20	1	20	28.7391	-88.4683	
2-21	2	21	28.7846	-88.4537	
2-22	2	22	28.8310	-88.5415	
2-23	2	23	28.8773	-88.6294	
2-24	2	24	28.9236	-88.7173	
2-25	2	25	28.9698	-88.8054	
2-26	2	26	29.0023	-88.8701	
2-27	2	27	29.0160	-88.8935	
2-28	2	28	29.0425	-88.9446	
2-29	2	29	29.0621	-88.9817	
2-30	2	30	29.0718	-89.0001	
3-31	3	31	29.7767	-88.7900	
3-32	3	32	29.7567	-88.7818	
3-33	3	33	29.6719	-88.7469	
3-34	3	34	29.5871	-88.7120	
3-35	3	35	29.5023	-88.6772	
3-36	3	36	29.4174	-88.6424	
3-37	3	37	29.3326	-88.6077	
3-38	3	38	29.2477	-88.5730	
3-39	3	39	29.1628	-88.5384	
3-40	3	40	29.0779	-88.5038	
3-41	3	41	28.9930	-88.4693	
3-42	3	42	28.9080	-88.4348	
3-43	3	43	28.8231	-88.4004	
4-44	4	44	28.8282	-88.3599	
4-45	4	45	28.9182	-88.3538	
4-46	4	46	29.0082	-88.3476	
4-47	4	47	29.0982	-88.3415	
4-48	4	48	29.1882	-88.3354	
4-49	4	49	29.2782	-88.3293	
4-50	4	50	29.3682	-88.3231	
4-51	4	51	29.4582	-88.3169	
4-52	4	52	29.5482	-88.3108	
4-53	4	53	29.6382	-88.3046	
4-54	4	54	29.7281	-88.2984	
4-55	4	55	29.8181	-88.2922	
4-56	4	56	29.9080	-88.2860	
4-57	4	57	29.9980	-88.2798	
4-58	4	58	30.0879	-88.2735	
4-59	4	59	30.1808	-88.2671	

Table 2. Allocation of Cores to Analyses

Priority/ Random Core#	Analysis
1	On-board GC/ MS (GC)
2	Sediment properties (SP)/ Visual Assessment(VA)
3	Trace metals (MT)/ BTEX (BT)
4	On-shore HC (HC)
5	Microtox (MX)/ Meiofauna (ME)
6	Macrofauna (MF)
7	
8	Archive (NO)

Random Core Number Generation with SampleIDs for Ocean Veritas

Station	1-2	Vessel Code		OV	
Drop	1				
Date	10/21/10			Generate Random Core Positions	
#Cores	6				
Core					
Position	**Number**	**Carrier #**	**Tube #**	**Sample ID(s)**	**Analyte**
1	3			SE-20101021-OV-1-2-MT-XXX SE-20101021-OV-1-2-BT-XXX	MT/BT
2	5			SE-20101021-OV-1-2-MX-XXX SU-20101021-OV-1-2-MX-XXX SE-20101021-OV-1-2-ME-XXX	MX/ME
3	8			NA	Bad
4	4			SE-20101021-OV-1-2-HC-XXX	HC
5	1			SE-20101021-OV-1-2-GC-XXX	GC
6	7			NA	Bad
7	2			SE-20101021-OV-1-2-SP-XXX SE-20101021-OV-1-2-VA-XXX	SP/VA
8	6			SE-20101021-OV-1-2-MF-XXX	MF

Note: Sample IDs generated by this macro do not include the last three digits provided by sampling team. Replace the "xxx" with these digits. Also, be sure to review IDs and change as appropriate. Sometimes multiple samples for a given analyte may be taken from a core.

Figure 1. Generated Table for Random Core Numbers

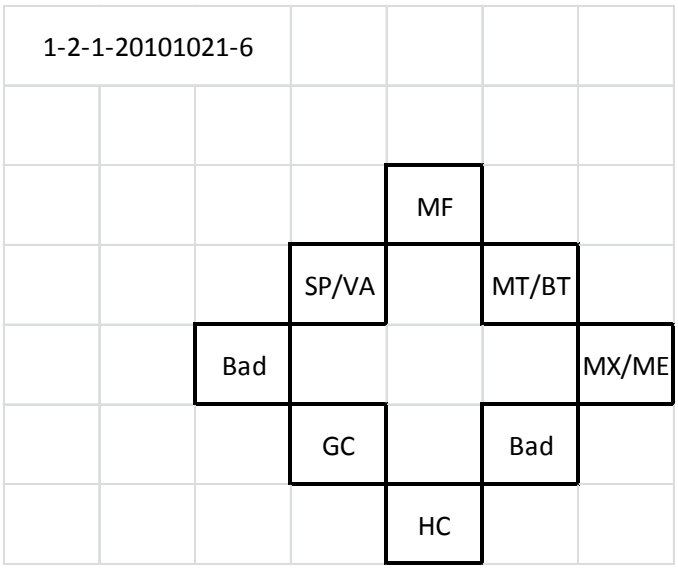

Figure 2. Sample of Randomly Generated Cores by Analytes

Assumes cores in positions 3 and 6 are unuseable (bad) and that no core will be archived and only one core will be sampled for macrofauna.