QUALITY ASSURANCE SAMPLING PLAN
WATER AND SEDIMENT SAMPLING AND MONITORING

FOR

DEEPWATER HORIZON INCIDENT

Prepared in conjunction with:
EPA Region 6
EPA Environmental Response Team

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1. INTRODUCTION

The Superfund Technical Assessment and Response Team (START) contractor has been tasked by the U.S. Environmental Protection Agency (EPA) Region 6 Prevention and Response Branch (PRB) to conduct water and sediment sampling and water monitoring for the Deepwater Horizon Incident also known as Deepwater Horizon Oil Spill off the coast of Louisiana near Venice, Plaquemines Parish, Louisiana. The START field team will mobilize the equipment required for the emergency response from the EPA warehouses as necessary. If possible, START will use government furnished property.

1.1 PROJECT OBJECTIVES

1.1.1 Monitoring and Sampling Strategies

EPA Region 6 will assess the impacts of the Deepwater Horizon Incident on the water and sediment quality of southeast Louisiana. EPA will collect surface water and sediment samples and will utilize multi-parameter water quality instruments.
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1.2 PROJECT TEAM

The Project Team will be divided into multiple locations and multiple teams based upon site conditions and operations. As the meteorological and operational situations change, sampling and monitoring teams and operations will adapt, based upon direction from the Unified Command. EPA OSCs and START from Region 6 will have responsibility for sampling and monitoring in Louisiana. EPA will coordinate with the Unified Command through EPA OSCs located in Houma, Louisiana and United States Coast Guard (USCG) in Robert, LA.

2. SITE DESCRIPTION AND BACKGROUND

The Gulf of Mexico Transocean Oil spill source is located approximately 52 miles southeast of Venice, Plaquemines Parish, Louisiana, (28.73667˚ N, -88.38722˚ W). The sources are a leaking production well and a release of diesel fuel caused by damage from the sinking of the Transocean Deepwater Horizon drill rig at BP Site Mississippi Canyon 252.

The spill is affected by wind and wave action and due to the conditions in the Gulf of Mexico; the spill has impacted the Louisiana coastline. Through coordination with the United State Coast Guard, British Petroleum PLC (BP), the Responsible Party, through their Oil Spill Response Organization (OSRO) contractors and the USCG are conducting a variety of countermeasures, which will include controlled burning of the released oil.

3. SAMPLING APPROACH AND PROCEDURES

Samples collected by EPA will be used to evaluate the nature of the contaminants present. EPA will collect water and sediment samples as necessary, including background water and sediment sampling along the SE Louisiana coastline. Samples collected as part of this emergency response (ER) will be obtained in accordance with START Standard Operating Procedures (SOPs).

3.1 OVERVIEW OF SAMPLING ACTIVITIES

EPA will conduct surface water and sediment samples at specific locations. These samples will be co-located and the locations are identified in Section 3.2.1, Marine Sediment Sampling. Samples will be collected from impacted areas and un-impacted areas to attempt to get data on the potentially impacted areas and unaffected background areas. Sample locations were determined (in coordination with the EPA Region 6 Water Division) using the EPA Office of Water "National Coastline Condition Assessment: Field Operations Manual" dated April 23, 2010. START will use EPA Scribe Environmental Sampling Data Management System (SCRIBE) software to manage sample data. Data will be managed according to the Data Management Plan developed for this response by the National Data Team (Appendix B).

3.1.1 Data Quality Objectives

The objective of surface water and sediment sampling is to characterize any impacts from the oil spill to the natural resources and ecosystems along the Louisiana shore. The goal is to collect obtain sufficient to support a comparison of the water and sediment quality to the EPA Region 3 Ecological Risk Assessment Marine Sediment Screening Benchmarks and Marine Surface Water Screening Benchmarks (Appendix D).

3.1.2 Health and Safety Implementation

The monitoring will be conducted in accordance with the site-specific health and safety plan (HASP). START personnel will conduct air monitoring in Level D personal protective equipment (PPE) as stated in the site HASP. The Field Safety Office (FSO) will be responsible for implementation of the HASP during this assessment and clean-up action. In accordance with the START general health and safety operating procedures, the START personnel will drive the route to the hospital specified in the HASP prior to initiating sampling activities.

3.2 Sampling/Monitoring Approach

All surface water and sediment samples will be collected in general accordance with the START SOPs 1002-01, SOP for Surface Water Sample Collection and SOP 1002-04, for Sediment Sampling. In addition to these SOPs, EPA's Environmental Environmental Response Team SOP #2013 Surface Water Sampling and SOP, #2016 Sediment Sampling and the Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analysis: Technical Manual will be consulted. Although specific sampling procedures are outlined in the SOPs, it should be noted that water samples will be collected prior to sediment samples to avoid cross contamination sampling boats shall approach sampling sites slowly to minimize disturbance to the sampling area substrate. SOPs are included in Appendix E and the specific sampling procedures are described below.

3.2.1 Marine Sediment Sampling

Sediment samples will be collected by START personnel according to SOPs and using equipment most appropriate to the site circumstances. Samples will be collected to obtain data on areas which may be impacted by the oil release. Sediment and water samples will be collected at the locations found on Figure 1 (Preferred Locations or Alternate Locations). Also, please refer to Table 3-2 for the sample coordinate locations. The OSC or the START Project Team Leader (PTL) will make the decision on the alternate sampling points. Sampling points, as a general rule, will be located within approximately 100 feet of ecologically sensitive areas. The collected sediment samples will be submitted to a qualified subcontracted commercial laboratory for the following analyses:

- Target Compound List Volatile Organic Compounds (TCL VOCs) by SW-846 Method 8260B.
- TCL Semi-volatile Compounds (SVOCs) by SW-846 Method 8270C.
- Target Analyte List (TAL) Metals by SW-846 Method 6010B.
- Mercury by SW-846 Method 7471.
- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH GRO) by SW-846 Method 8015B.
- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B.
- Polynuclear Aromatic Hydrocarbons (PAH) by SW-846 Method 8270C SIM.
- Oil and Grease by SW-846 9071B.
- Grain Size by ASTM D422
- Toxicity in Sediments by the method described in 40 CFR Part 435 using a 96 hour definitive test on test species *Leptocheirus plumulosus*.
- Total Organic Carbon by SW- 846 9060/SM5310

Laboratory-specific analyte lists and reporting limits are included in Appendix C. Deviations from the sample locations will be due to new observations made prior to sampling, information obtained in the field that warrants an altered sampling point, difficulty in sample collection, or limited access. The EPA OSC will be notified, and concurrence will be obtained should significant deviations from the planned sampling points be proposed. Details regarding deviations of the QASP will be documented in the site logbook.

3.2.2 Marine Surface Water Sampling

START personnel will collect surface water samples for EPA. The samples will be collocated with the sediment sample locations (see Section 3.2.1, Marine Sediment Sampling), and are based upon the cited National Coastal Coastline A guidance. Surface water samples will be submitted to a qualified subcontracted commercial laboratory for the following analyses:

- Total Compound List Volatile Organic Compounds (TCL VOCs) by SW-846 Method 8260B.
- TCL Semivolatile Compounds (SVOCs) by SW-846 Method 8270C.
- Total Analyte List (TAL) Metals by SW-846 Method 6010B.
- Mercury by SW-846 Method 7470.

- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH GRO) by SW-846 Method 8015B.
- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B.
- Polynuclear Aromatic Hydrocarbons (PAH) by SW-846 Method 8270C SIM.
- Total Organic Carbon (TOC) by SW-846 Method 9060/SM5310.
- Oil and Grease by EPA 1664.

The laboratory-specific analyte list is attached as Appendix C.

3.2.3 Surface Water Quality Monitoring

Surface water quality parameters will be collected at each surface water sample location. These parameters will be collected using a Multi-parameter Water Quality real-time monitor. Measurements may not be possible at all locations. Site conditions and professional judgement will be used to assess whether monitoring can take place at a location or if the area is too contaminated to collect for readings. The data collected will be electronically logged when possible, or written out in the field logbook. Data collected will include:

- pH (0-14 standard units)
- Conductivity (Siemens/meter)
- Dissolved Oxygen (milligrams/liter)
- Turbidity (NTU)

Water Quality instruments will be used according to manufacturers directions and standard operating procedures (SOPs). The monitors will be field calibrated prior to use or in the event of a change of sensors.

3.2.4 Sampling and Field QC Procedures

Samples will be collected using equipment and procedures appropriate to the matrix, parameters, and sampling objectives. The volume of the sample collected will be sufficient to perform the analysis requested. Samples will be stored in the proper types of containers and preserved in a manner for the analysis to be performed per laboratory guidelines.

Dedicated sampling equipment, sample containers, and PPE will be maintained in a clean, segregated area. Personnel responsible for sampling will change gloves between each sample collection/handling activity.

START personnel will collect field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples of sediment and surface water and QA/QC samples as needed during the removal assessment sampling activities. QA/QC samples will be collected according to the following dictates:

- Blind field duplicate samples will be collected during sampling activities at locations selected by the START PTL. The data obtained from these samples will be used to assist in the quality assurance of the sampling procedures and laboratory analytical data by allowing an evaluation of reproducibility of results. Efforts will be made to collect duplicate samples in locations where there is visual evidence of contamination or where contamination is suspected. Blind field duplicate samples will be collected at the rate of one duplicate for every 10 samples collected.

- If necessary, field blanks will be collected when VOC samples are taken and are analyzed only for VOC analytes. The field blank consists of American Society of Testing and Materials (ASTM) Type II reagent-grade water poured into a VOC sample vial at the sampling site. It is handled like an environmental sample and transported to the laboratory for analysis. Field blanks are used to assess the potential introduction of contaminants from ambient sources (e.g., gasoline motors in operation, etc.) to the samples during sample collection. Is anticipated that no field blanks will be collected as part of this sampling activity.

- Laboratory prepared trip blanks will be submitted with each shipment containing samples for VOC analysis. The laboratory prepared trip blanks will consist of two 40-milliliter (ml) glass sample containers with Teflon-lined septum caps. The trip blanks will be prepared with deionized water prior to leaving the laboratory. Trip blanks are used to evaluate the potential cross-contamination that may occur during the shipment of samples.

- Temperature blanks will be prepared in the field and will consist of one 40-milliliter glass sample container with Teflon-lined septum cap. The temperature blank will be packaged along with the field samples in the shipping cooler and will represent the temperature of the incoming cooler upon receipt at the laboratory. Use of these samples within a shipping container enables the laboratory to assess the temperature of the shipment without disturbing any of the field samples.

- MS/MSD samples will be collected during sampling activities at locations selected by the START PTL. The data obtained from these samples will be used to assist in the quality assurance of the sampling procedures and laboratory analytical data by allowing an evaluation of reproducibility of results. Efforts will be made to collect MS/MSD samples in locations where there is no visual evidence of contamination or where contamination is not suspected. MS/MSD samples will be collected at the rate of one MS/MSD sample per matrix for every 20 field samples collected.

3.2.5 Investigation-Derived Wastes

Attempts will be made to eliminate or minimize the generation of investigation-derived waste (IDW) during this investigation. All non-dedicated equipment will be decontaminated according to START SOP 1201.01. Non-dedicated equipment will be rinsed with soap and water and attempts will be made to dispose of decontamination fluids on-site. The analytical data from collected samples will be reviewed after completion of the field activities, and disposal options will be evaluated accordingly. It is anticipated that minimal amounts of IDW will be generated during this activity.

3.2.6 Sampling and Sample Handling Procedures

Samples will be collected using equipment and procedures appropriate to the matrix, parameters, and sampling objectives. The volume of the sample collected must be sufficient to perform the laboratory analysis requested. Samples must be stored in the proper types of containers and preserved in a manner appropriate to the analysis to be performed. A sample collection and analyses summary table (Table 3-1) is presented in Section 3.4.

All clean, decontaminated sampling equipment and sample containers will be maintained in a clean, segregated area. All samples will be collected with clean decontaminated equipment following START SOP 1201.01. All samples collected for laboratory analysis will be placed directly into pre-cleaned, unused glass or plastic containers. Sampling personnel will change gloves between each sample collection/handling. All samples will be assembled and catalogued prior to shipping to the designated laboratory (following START SOP 1101.1 and 1102.01).

3.3 SAMPLE MANAGEMENT

Specific nomenclature that will be used by START personnel will provide a consistent means of facilitating the sampling and overall data management for the project (START SOP 0110.04). The START Assessment/Inspection Manager must approve any deviations from the sample nomenclature proposed below.
As stated in START SOP 0110.04, sample nomenclature will follow a general format regardless of the type or location of the sample collected. The general nomenclature consists of the following components:

- Geographic location (e.g., location, NCCA Site number).
- Date (YYYYMMDD format)
- Sample Type (normal, duplícate, etc.).
- Sampling Team Number- An additional parameter used to further differentiate samples.

Sample data management will be completed utilizing SCRIBE including Chain-of-Custody (COC) and sample documentation needs.

3.4 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Water samples will be stored in coolers at 4 degrees centigrade (C), on-site until shipped for laboratory analysis. The samples will be shipped via common carrier to the laboratory or driven by START members.

This turnaround time (TAT) is initiated when the samples are collected in the field and continues until the analytical results are made available to START either verbally or by providing facsimile or email copies of the results for review. All samples that have been analyzed will be disposed by the designated laboratory in accordance with the laboratory SOPs.

Table 3-1

Requirements for Containers, Preservation Techniques, Volumes, and Holding Times
Deepwater Horizon Incident Surface Water and Sediment Sampling
Plaquemines Parish, Louisiana

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
TCL VOCs	SW846 8260B	Water / Solid	Glass, (Teflon-lined septum for water)	4°C, HCl to pH<2 (pH adjust for water only)	3 x 40 mL vials (water, 4 oz (solid)	14 days (7 days if unpreserved by acid for water
TCL SVOCs	SW846 8270C	Water / Solid	Amber Glass, (Teflon-lined for water)	4°C	2 x 1 liter, 8 oz	7 days extract (water), 14 days (solid)/ 40 days analysis
TAL Metals and Mercury	SW846 6010B and SW846 7470A	Water / Solid	Polyethylene (water), Glass (solid)	HNO_3 to pH<2 (water), 4°C	500 mL, 8oz	28 days for mercury 180 days all other metals
TPH GRO	SW846 8015B	Water / Solid	Glass, (Teflon-lined septum for water)	4°C, HCl to pH<2 (pH adjust for water only)	3 x 40 mL vials (water, 4 oz (solid)	14 days (7 days if unpreserved by acid for water)
TPH DRO and ORO	SW846 8015B	Water / Solid	Amber Glass, (Teflon-lined for water)	4°C	2 x 1 liter, 4 oz	7 days extract (water), 14 days (solid)/ 40 days analysis
PAH	SW846 8270C SIM	Water / Solid	Amber Glass, (Teflon-lined for water)	4°C	2 x 1 liter, 8 oz	7 days extract (water), 14 days (solid)/ 40 days analysis
Oil & Grease	SW846 9071B/EPA 1664	Water / Solid	Polyethylene (water) Glass (Solid)	4°C	500 ml, 8 oz	7 days extract (water), 14 days (solid) 40 day analysis
Total Organic Carbon	SW 846 9060/SM5310	Water/ Solid	Glass, (Teflon-lined septum for water)	H_2SO_4 to pH<2 (water), 4°C	3 x 40 mL vials (water) 4 oz (solid)	28 days

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
Acute Toxicity (Sediments Only)	40 CFR Part 435	Sediment	1.5 gallon cubitainer (Poly.)	4°C	2 gallons	29 days
Grain Size (Sediments Only)	ASTM D422	Solid	Refer to laboratory requirements	4°C	Refer to laboratory requirements	NA

Table 3-2
Preferred Sample Location Coordinates

Site ID	Longitude*	Latitude*
NCA10-1327	-89.927341	29.432087
NCA10-1328	-90.126516	29.212334
NCA10-1331	-90.018045	29.418832
NCA10-1332	-90.076706	29.279204
NCA10-1333	-90.676196	29.104132
NCA10-1336	-90.372929	29.107282
NCA10-1344	-89.150961	30.148285
NCA10-1347	-89.066439	29.576579
NCA10-1352	-88.914901	30.062319
NCA10-1353	-89.156593	29.968175
NCA10-1355	-88.981786	29.833281
NCA10-1361	-88.848469	29.965839
NCA10-1405	-89.009077	29.172189
NCA10-1409	-89.339624	29.177025
NCA10-1451	-89.675896	30.103665
NCA10-1459	-89.529007	30.049147
NCA10-1470	-89.765872	30.009067
NCA10-2327	-90.578971	29.283181
NCA10-2331	-90.495911	29.157479
NCA10-2333	-90.304670	29.183293
NCA10-2335	-90.809539	29.067275
NCA10-2337	-90.345622	29.245783
NCA10-2338	-90.592430	29.219904
NCA10-2339	-90.823663	29.106752
NCA10-2343	-89.342629	29.426337
NCA10-2346	-89.426212	29.949950
NCA10-2350	-89.591953	29.535754
NCA10-2354	-89.659827	29.577438
NCA10-2355	-89.370692	29.608382
NCA10-2358	-89.198907	30.064607
NCA10-2359	-89.514858	29.719013
NCA10-2363	-89.221901	29.441461
NCA10-2364	-89.215799	29.656724
NCA10-2365	-89.367038	30.024585
NCA10-2414	-89.349783	29.048024
NCA10-2415	-89.215055	29.020414
NCA10-2471	-89.295014	30.112475
NCA10-2474	-89.891728	30.139366
NCA10-2475	-89.511183	30.153722
NCA10-1337	-89.575591	29.631771
1	-89.436542	29.183946
2	-89.520868	29.232797
3	-89.598796	29.251988
4	-89.662186	29.288627
5	-89.742441	29.307236
6	-89.833745	29.320612
7	-89.841887	29.422385
8	-90.025078	29.346201
9	-90.194892	29.099039
10	-90.895087	29.129861
11	-91.003257	29.173478
12	-91.096306	29.192670
13	-91.170746	29.222911
14	-91.242277	29.235123
15	-91.317298	29.280485

* Coordinates are in WGS 84

Table 3-3
Alternate Sample Location Coordinates

Site ID	Longitude*	Latitude*
NCA10-1323	-90.778687	29.059794
NCA10-1324	-90.361315	29.150106
NCA10-1326	-90.575960	29.268985
NCA10-1330	-90.554753	29.189039
NCA10-1334	-90.767101	29.080375
NCA10-1339	-89.199403	30.025680
NCA10-1341	-89.621529	29.585999
NCA10-1342	-89.319565	29.420093
NCA10-1345	-89.225177	29.634393
NCA10-1346	-89.204479	29.950181
NCA10-1349	-89.459698	29.555972
NCA10-1351	-89.196227	29.855200
NCA10-1354	-89.440691	29.516446
NCA10-1356	-89.179966	30.024576
NCA10-1358	-89.214782	29.846497
NCA10-1359	-89.183621	30.164290
NCA10-1408	-89.264730	29.012731
NCA10-1448	-89.684145	30.049436
NCA10-1449	-89.691056	29.935247
NCA10-1455	-89.502009	30.145039
NCA10-1456	-89.324068	30.111283
NCA10-1460	-89.439455	30.078321
NCA10-1464	-89.598196	30.092905
NCA10-1467	-89.209760	30.145844
NCA10-2318	-91.325534	29.351390
NCA10-2326	-91.179798	29.341875
NCA10-2334	-90.453972	29.088912
NCA10-2336	-89.921514	29.415091
NCA10-2341	-90.052315	29.296857
NCA10-2345	-89.192200	29.891808
NCA10-2347	-89.479792	29.526850
NCA10-2348	-89.009361	29.609556
NCA10-2349	-89.141753	30.058523
NCA10-2351	-89.454055	29.632694
NCA10-2366	-88.917164	29.939559
NCA10-2408	-89.326573	29.089121
NCA10-2410	-89.280079	29.039037
NCA10-2411	-89.036766	29.171788
NCA10-2413	-89.209097	29.000449
NCA10-2452	-89.396893	30.168639
NCA10-2456	-89.715458	29.936308
NCA10-2460	-89.636334	30.064765
NCA10-2462	-89.802172	30.019351
NCA10-2464	-89.501948	30.126771
NCA10-2473	-89.632137	29.925467
NCA10-1321	-90.993062	29.141786
NCA10-1322	-90.471559	29.155495
NCA10-1338	-89.567125	29.494591
NCA10-1403	-89.311989	29.094563
NCA10-1447	-89.795724	29.989211

* Coordinates are in WGS 84

Figure 1
Water Sampling Locations

4. ANALYTICAL APPROACH

4.1 OFF-SITE ANALYSIS

The water and sediment samples will be submitted to a qualified subcontracted commercial laboratory for the following analyses with a turn-around-time of 24 hours for analytical results.

- Total Compound List Volatile Organic Compounds (TCL VOCs) by SW-846 Method 8260B (Surface Water and Sediments).
- TCL Semivolatile Compounds (SVOCs) by SW-846 Method 8270C (Surface Water and Sediments).
- Total Analyte List (TAL) Metals by SW-846 Method 6010B (Surface Water and Sediments).
- Mercury by SW-846 Method 7470A/7471 (Surface Water and Sediments).
- Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH GRO) by SW-846 Method 8015B (Surface Water and Sediments).
- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B (Surface Water and Sediments).
- Polynuclear Aromatic Hydrocarbons (PAH) by SW-846 Method 8270C SIM (Surface Water and Sediments).
- Total Organic Carbon (TOC) by SW-846 Method 9060/SM5310 (Surface Water and Sediments).
- Oil and Grease by SW-846 9071 (Sediment).
- Oil and Grease by EPA 1664 (Water).
- Grain Size by ASTM D422 (Sediments).
- Toxicity in Sediments by the method described in 40 CFR Part 435 using a 96 hour definitive test on test species Leptocheirus Plumulosus (Sediments)

The START PTL will indicate on the Chain of Custody that a Level II data package is required. The lab contacts and shipping information are as follows:

Accutest, Inc. – Water
10165 Harwin Drive
Suite 150
Houston, TX 77036
713.271.4700
Greg Grandits or Sylvia Garza

GCAL, Inc. – Sediment
7979 GSRI Avenue
Baton Rouge, LA 70820
225.769.4900
Shelley Bourgeois or Anna Kinchen

C-K Associates, LLC – Toxicology
17170 Perkins Road
Baton Rouge, LA 70810
225.755.1000
Tre' Haydel

Deliverables will include preliminary data via email in pdf format and an EDD (EDD) in excel format and an electronic deliverable. The final data deliverable will include a full Contract Laboratory Program (CLP) like data package in PDF format and a final EDD in excel format.

4.2 DATA VALIDATION

START will validate the analytical data based Level II deliverable generated by the outside laboratories using EPA-approved validation procedures in accordance with the EPA CLP Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review. A summary of the data validation findings will be presented in Data Validation Summary Reports as part of the final report. START will evaluate the following applicable parameters to verify that the analytical data is within acceptable QA/QC tolerances:

- The completeness of the laboratory reports, verifying that required components of the report are present and that the samples indicated on the accompanying chain-of-custody are addressed in the report.
- The results of laboratory blank analyses.
- The results of laboratory control sample (LCS) analyses.
- The results of matrix spike/matrix spike duplicate (MS/MSD) analyses.
- The results of surrogate recovery analyses.
- Laboratory precision, by reviewing the results for blind field duplicates.

Variances from the QA/QC objectives will be addressed as part of the Data Validation Summary Reports.

5. QUALITY ASSURANCE

An EPA Region 6 Quality Control (QC) Officer will be assigned and will monitor work conducted throughout the entire project including reviewing interim report deliverables and field audits. The START PTL will be responsible for QA/QC of the field sampling and monitoring activities. The designated laboratory utilized during the investigation will be responsible for QA/QC related to the analytical work. START personnel will also collect samples to verify that laboratory QA/QC is consistent with the required standards and to validate the laboratory data received.

5.1 SAMPLE CUSTODY PROCEDURES

Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. After sample collection and identification, samples will be maintained under chain-of-custody (COC) procedures. If the sample collected is to be split (laboratory QC), the sample will be allocated into similar sample containers. Sample labels completed with the same information as that on the original sample container will be attached to each of the split samples. Personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

START personnel will prepare and complete chain-of-custody forms using the Scribe Environmental Sampling Data Management System (SCRIBE) for all samples sent to a START designated off-site laboratory. The chain-of-custody procedures are documented and will be made available to all personnel involved with the sampling. A typical chain-of-custody (COC) record will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each sample label and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples. At the completion of the project, the data manager will export the SCRIBE COC documentation to the Analytical Service Tracking System (ANSETS) database.

Samples relinquished to the participating laboratories will be subject to the following procedures for transfer of custody and shipment:

- Samples will be accompanied by the COC record. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of the sample transfer on the record. This custody records document transfer of sample custody from the sampler to another person or to the laboratory.

- Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be custody-sealed for shipment to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape that is wrapped around the package at least twice. The custody seal will then be folded over and stuck to seal to ensure that the only access to the package is by cutting the filament tape or breaking the seal to unwrap the tape.

- If sent by common carrier, a bill of lading or airbill will be used. Bill of lading and airbill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer.

5.2 PROJECT DOCUMENTATION

Field observations will be recorded legibly and in ink and by entry into field logbooks, Response Manager, or SCRIBE. Response Manager is the Enterprise Data Collection System designed to provide near real-time access to non-analytical data normally collected in logbooks. Response Manager provides a standard data collection interface for modules of data normally collected by START field personnel while on-site. These modules fall into two basic categories for Response and Removal. The modules include Emergency Response, Reconnaissance, Facility Assessment, Shipping, Containers, Materials, Calls, HHW, and General/Site Specific data. The system provides users with a standard template for laptop/desktop/tablet PCs that will synchronize to the secure web interface using merge replication technology to provide access to field collected data via on the Regional Response Center Enterprise Data Management System (RRC-EDMS) EPA Web Hub. Response Manager also includes a PDA application that provides some of the standard data entry templates from Response Manager to users for field data entry. Response Manager also includes an integrated GPS unit with the secure PDA application, and the coordinates collected in Response Manager are automatically mapped on the RRC-EDMS interactive mapping site. GIS personnel can then access this data to provide comprehensive site maps for decision-making support.

Response Manager also includes an Analytical Module that is designed to give SCRIBE users the ability to synchronize the SCRIBE field data to the RRC-EDMS Web Hub. This allows analytical data managers and data validators access to data to perform reviews from anywhere with an Internet connection. The Analytical Module is designed to take the analytical data entered into EPA SCRIBE software and make it available for multiple users to access on one site. START personnel will utilize SCRIBE for data entry on-site and will upload to the Response Manager Analytical module.

5.2.1 Field Documentation

The following field documentation will be maintained as described below.

Field Logbook. The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. Logbook entries will be signed by the individuals making them. Entries should include, at a minimum, the following:

- Site name and project number.
- Names of personnel on-site.
- Dates and times of all entries.
- Description of all site activities, including site entry and exit times.
- Noteworthy events and discussions.
- Weather conditions.
- Site observations.
- Identification and description of samples and locations, including Latitudes and Longitudes
- Subcontractor information and names of on-site personnel.
- Dates and times of sample collections and chain-of-custody information.
- Records of photographs.
- Site sketches of sample location including identification of nearest roads and surrounding developments.
- Calibration results.
- Changes from the sampling plan

Sample Labels. Sample labels will be securely affixed to the sample container. The labels will clearly identify the particular sample and include the following information:

- Site name and project number.
- Date and time the sample was collected.
- Sample preservation method.
- Analysis requested.
- Sampling location.

Chain-of-Custody Record (COC). A COC will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it.

Custody Seal. Custody seals demonstrate that a sample container has not been tampered with or opened. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

Photographic Documentation. START will take photographs to document site conditions and activities. Photographs should be taken with either a film camera or digital camera capable of recording the date on the image. Each photograph will be recorded in the logbook and within Response Manager with the location of the photographer, direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Where appropriate, the photograph location, direction, and subject will also be shown on a site sketch and recorded within Response Manager.

5.2.2 Report Preparation

At the completion of the project, START will review and validate laboratory data and prepare a draft report of field activities and analytical results for EPA OSC review. Draft deliverable documents will be uploaded to the EPA TeamLink website for EPA OSC review and comment.

5.2.3 Response Manager

START will use the Response Manager module located on the EPA Web Hub to collect and organize the data collected from project activities. The information to be included encompasses some or all of the following depending on the specific project needs:

- General Module – Site specific data including location and type of site. It also includes an area for key site locations including geo-spatial data associated with the key site locations.
- Emergency Response Module – includes the following sub-modules: Basic Info, HAZMAT, Release, Time Line Log, Incident Zones, Photos, Sensitive Receptors, Evacuations, Source, Cause, and Weather.
- Reconnaissance Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for targeted reconnaissance efforts. Typically the data in this module is associated with ESF-10 deployments and the clean-up of orphaned containers and hazardous debris, but the module can be utilized for any and all reconnaissance activities.
- Facility Assessment Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for assessments of structures. This is typically utilized for EPA regulated program facilities during an ESF-10 deployment of resources. This module can be utilized to track the assessment of any facilities including multiple assessments of the fixed facilities.
- Shipping Module – provides standard templates for creating a cradle-to-grave record of waste shipments from the site until they are recycled or destroyed. This includes the ability to capture

manifests and manifest line items and to upload photos/original documents to support the records.

- Container Module – provides standard templates for cataloguing containers including HAZCAT and Layer information in each container. The module also allows for the tracking of which containers are bulked.
- Properties Module – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for collection of property data including access agreements and assessments of the property and current status of property regarding the site removal action.
- Materials Module – provides standard templates for tracking materials that are brought on-site or that are removed from the site.
- Daily Reports – provides standard templates for tracking daily site activities, daily site personnel, and daily site notes for reporting back to the EPA OSC in a POLREP or SITREP.
- Household Hazardous Waste Module (HHW) – provides standard templates with the flexibility of adding any additional questions of values to the drop-down lists for tracking the amount of HHW collected at individual collection stations by HHW type.
- Data Files – data files can be uploaded in the photo-module section and be associated with individual records or with the site in general. The meta data associated with that data file can be filled in using the photo log fields.

The data stored in the Response Manager database can be viewed and edited by any individual with access rights to those functions. At anytime deemed necessary, Pollutions Reports (POLREPs) and/or Situation Reports (SITREPs) can be generated by exporting the data out of Response Manager into Microsoft Excel/Word. The database is stored on a secure server and backed up regularly.

May 8, 2010

ADDENDUM TO THE QUALITY ASSURANCE SAMPLING PLAN WATER AND SEDIMENT SAMPLING AND MONITORING FOR THE DEEPWATER HORIZON INCIDENT

This is an addendum to the Quality Assurance Sampling Plan (QASP) that was developed for the purpose of assessing the impacts of the Deepwater Horizon Incident on the water and sediment quality of southeast Louisiana.

The purposes of this field reconnaissance and sampling effort are:

1. Determine the presence or absence of oil from the spill in surface water near the locations sampled under the original QASP;
2. Collect new samples at those surface water locations where oil is not yet visible to characterize existing (baseline) the water quality conditions for future comparisons in as the oil spill moves along the Gulf Coast.

Table and maps are available to locate these sample points.

Surface water sampling collection, documentation, analytical methods, and will be conducted using the Quality Assurance Sampling Plan for Water and Sediment Sampling and Monitoring for the Deepwater Horizon Incident, May 8, 2010. The QASP is being amended to modify: 1) the selection of sampling locations, 2) the analyses that will be necessary at these locations, and 3) the turnaround time for the future analytical results from future surface water and sediment samples.

START personnel will collect surface water samples for EPA. Surface water will be inspected for the visual presence of oil. Up to 20 surface water samples will be collected from areas where oil is not yet visible and submitted to a qualified subcontracted commercial laboratory to be analyzed for:

- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B.

Surface water quality parameters will also be collected at each surface water sample location. These parameters will be collected using a Multi-parameter Water Quality real-time monitor. Measurements may not be possible at all locations. Site conditions and professional judgement will be used to assess whether monitoring can take place at a location or if the area is too contaminated to collect for readings. The data collected will be electronically logged when possible, or written out in the field logbook. Data collected will include:

- pH (0-14 standard units)
- Conductivity (Siemens/meter)
- Dissolved Oxygen (milligrams/liter)
- Turbidity (NTU)

This addendum also includes a change in the turnaround times for the analytical results requested for both surface water and sediment samples from a 24-hour turnaround time to a 10-day turnaround time. EPA had requested a 24-hour turnaround for preliminary results of analyses for the samples collected under the original QASP. The data from xx sediment samples and yy surface water samples collected as of May 7, 2010, have provided a good initial characterization of "background" (pre-spill) conditions along the Southeast Louisiana coast, fulfilling the data quality objective for the initial sampling event.

The remaining sediment samples to be collected under the existing QASP will be collected west of the Mississippi River. These samples are necessary for a complete characterization of the Louisiana coastline. However, modeling data indicates that the oil spill is less likely to migrate west and affect the coastline west of the mouth of the Mississippi River. Therefore, EPA does not need the analytical results from future samples as quickly and a 10-day turnaround time is sufficient for future decision making.

The 10-day turnaround time is sufficient also since the sample data will be correlated with data from 10-day toxicity tests being conducted under the original QASP.

May 14, 2010

ADDENDUM 2.0 TO THE QUALITY ASSURANCE SAMPLING PLAN WATER AND SEDIMENT SAMPLING AND MONITORING FOR THE DEEPWATER HORIZON INCIDENT

This is an addendum to the Quality Assurance Sampling Plan (QASP) that was developed for the purpose of assessing the impacts of the Deepwater Horizon Incident on the water and sediment quality of southeast Louisiana.

The purpose of this addendum is to:

1) To collect free oil globules, mousse and/or other surface oil at near shore surface water locations (i.e., within 100 feet of the shoreline) where oil and/or an oily sheen is visible. The data will be used to characterize the oil and dispersant mixture that is reaching the shoreline, and

2) To analyze a product sample of Corexit EC9527A and Corexit EC9500A dispersants for future data evaluation.

Sample collection, documentation, analytical methods will be conducted using the Quality Assurance Sampling Plan for Water and Sediment Sampling and Monitoring for the Deepwater Horizon Incident, May 5, 2010.

The QASP is being amended as follows: 1) to include the collection of near shore oil and dispersant samples from shallow surface water, 2) sampling locations will be based on visible observation of surface oil by field staff, 3) sampling methods will be used that maximize the volume of oil collected and minimize the volume of water and sediment collected in each sample, 4) a product sample of Corexit EC9527A and Corexit EC9500A will be obtained for analysis, and 5) analyses and sample volumes of the near shore oil and dispersant samples and the dispersant product samples will be adjusted as described in the tables below.

START personnel will collect the near shore oil samples for EPA. Surface water will be inspected for the visual presence of oil globules and surface oil. Surface water samples may be collected over a period of time as directed by the EPA OSC and will be submitted to the EPA Houston Lab for analysis. The EPA Houston address is:

US EPA Houston Laboratory
10625 Fallstone Rd
Houston, Texas 77099
Attn: Ms Christy Warren (281)-983-2137

Near shore oil and oily water samples will be analyzed for:

- Total Compound List Volatile Organic Compounds (TCL VOCs) by SW-846 Method 8260B.
- TCL Semivolatile Compounds (SVOCs including polynuclear Aromatic Hydrocarbons (PAHs) by SW-846 Method 8270C.
- Total Analyte List (TAL) Metals by SW-846 Method 6010B.
- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B.
- TICs for straight chain hydrocarbons
- Oil and Grease by EPA 1664
- Propylene glycol (method to be determined by lab)
- Di(2-ethylhexyl) sodium sulfosuccinate (method to be determined by lab)
    - (Note: Report only as Organic Sulfononic Acid Salt)
- 2-ethylhexyl alcohol (method to be determined by lab)
- 2-Butoxyethyl alcohol / 2-Butoxyethanol (method to be determined by lab)
- 2-propanol, 1-(2-butoxy-1-methylethoxyl) (method to be determined by lab)

Changes to sample volumes and containers are noted in the following tables.

Table 1. Near Shore Oil and Oily Water Samples
Requirements for Containers, Preservation Techniques, Volumes, and Holding Times
Deepwater Horizon Incident

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
TCL VOCs	SW846 8260B	Water / Solid	Glass, (Teflon-lined septum for water)	4°C, HCl to pH<2 (pH adjust for water only)	4 x 40 mL vials (water, 4 oz (solid)	14 days (7 days if unpreserved by acid for water
TCL SVOCs	SW846 8270C	Water / Solid	Amber Glass, (Teflon-lined for water)	4°C	2 x 1 liter, 8 oz	7 days extract (water), 14 days (solid)/ 40 days analysis
TAL Metals	SW846 6010B	Water / Solid	High Density Polyethylene (water), Glass (solid)	HNO_3 to pH<2 (water), 4°C	1iter, 8oz	28 days for mercury 180 days all other metals
TPH DRO and ORO	SW846 8015B	Water / Solid	Amber Glass, (Teflon-lined for water)	4°C	2 x 1 liter, 4 oz	7 days extract (water), 14 days (solid)/ 40 days

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
						analysis
Oil & Grease	SW846 9071B/EPA 1664	Water / Solid	Amber glass (water) Glass (Solid)	HCl to pH<2 (water), 4°C	1 liter, 8 oz	7 days extract (water), 14 days (solid) 40 day analysis
Dispersant Compounds Propylene glycol Di(2-ethylhexyl) sodium sulfosuccinate 2-propanol, 1-(2-butoxy-1-methylethoxyl) 2-ethylhexyl alcohol 2-Butoxyethyl alcohol / 2-Butoxyethanol	Methods for each dispersant compound will be determined by lab	Water/ Solid	Glass, (Teflon-lined septum for water)	4°C	2 x 40 mL vials (water, 4 oz (solid) Represents the total volume of sample needed to run all dispersant analyses	N/A

Table 2. Corexit EC9527A Dispersant Product Sample
Requirements for Containers, Preservation Techniques, Volumes, and Holding Times
Deepwater Horizon Incident

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
Propylene glycol Di(2-ethylhexyl) sodium sulfosuccinate	Methods for each dispersant compound will be determined by lab	Product	Amber glass	4°C	2 x 1 liter Represents the total volume of sample	N/A

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
2-ethylhexyl alcohol 2-Butoxyethyl alcohol / 2-Butoxyethanol					needed to run all dispersant analyses	

Table 3. Corexit EC9500A Dispersant Product Sample
Requirements for Containers, Preservation Techniques, Volumes, and Holding Times
Deepwater Horizon Incident

Name	Analytical Methods	Matrix	Container	Preservation	Minimum Volume or Weight	Maximum Holding Time
TCL VOCs	SW846 8260B	Product	Amber glass	4°C	2 x 1 liter Represents the total volume of sample needed to run all dispersant analyses	7 days
Propylene glycol Di(2-ethylhexyl) sodium sulfosuccinate 2-propanol, 1-(2-butoxy-1-methylethoxyl) 2-ethylhexyl alcohol	Methods for each dispersant compound will be determined by lab					N/A

This addendum also includes a change in the turnaround times for the analytical results requested for near shore oil samples from a 24-hour turnaround time to a 5-day turnaround time.

The remaining portions of the QASP are still in effect.

May 14, 2010

ADDENDUM 3.0 TO THE QUALITY ASSURANCE SAMPLING PLAN WATER AND SEDIMENT SAMPLING AND MONITORING FOR THE DEEPWATER HORIZON INCIDENT

This is an addendum to the Quality Assurance Sampling Plan (QASP) that was developed for the purpose of assessing the impacts of the Deepwater Horizon Incident on the water and sediment quality of southeast Louisiana. The oil leak from the oil rig has resulted in oil reaching bays and beaches along the Gulf Coast. Shoreline sampling will commence as soon as possible after oil makes landfall as determined by the Incident Command.

The purpose of this field reconnaissance and sampling effort is to:

Conduct investigations and sampling to collect samples of fresh oil, mousse, tar, tarballs, tar patties that accumulate on beaches, marshes, tidal flats, or other shoreline types. The data will be used to characterize the oil (the dispersant mixture in the oil can not be analyzed by the Houston Lab at this time) that is reaching the shoreline.

Sample collection, documentation, and analytical methods will be conducted using the Quality Assurance Sampling Plan for Water and Sediment Sampling and Monitoring for the Deepwater Horizon Incident, May 5, 2010. The QASP is being amended as follows: 1) to include the collection of fresh oil (unweathered liquid oil), mousse (emulsified oil occurring over broad surfaces), tar (highly weathered oil, of tarry nearly solid consistency), tarballs (discrete accumulations of oil < 10cm in diameter), tar patties (discrete accumulations of oil > 10 cm) or asphalt (cohesive, heavily oil surface sediments) on beaches, marshes, tidal flats, or other shoreline types, 2) sampling locations will be based on visible observation of surface oil by field observers, and 3) sampling methods will be used that maximize the volume of oil collected and minimize the volume of water and sediment collected per sample.

Samples will be collected at a point on the beach where obvious staining or oil is visible. Only the top 1” to a max of 3” of sediment will be collected including the oil and include an area large enough to obtain the required volume of sample for all analyses. The GPS coordinates for each baseline beach station will be used to determine the post impact sampling locations.

START personnel will collect the shoreline oil samples for EPA and will be submitted to the EPA Houston Lab for analysis. The EPA Houston address is:

US EPA Houston Laboratory
10625 Fallstone Rd
Houston, Texas 77099
Attn: Ms Christy Warren (281)-983-2137

Samples will be analyzed for:

- Total Compound List Volatile Organic Compounds (TCL VOCs) by SW-846 Method 8260B.
- TCL Semivolatile Compounds (SVOCs including polynuclear Aromatic Hydrocarbons (PAHs) by SW-846 Method 8270C.
- Total Analyte List (TAL) Metals by SW-846 Method 6010B.
- Total Petroleum Hydrocarbons – Diesel and Oil Range Organics (TPH DRO/ORO) by SW-846 Method 8015B.
- TICs for straight chain hydrocarbons
- Oil and Grease by EPA 1664.

Changes to sample volumes and containers are noted in the following table.

Requirements for Containers, Preservation Techniques, Volumes, and Holding Times
Deepwater Horizon Incident
Shoreline Oil Samples

Name	**Analytical Methods**	**Matrix**	**Container**	**Preservation**	**Minimum Volume or Weight**	**Maximum Holding Time**
TCL VOCs	SW846 8260B	Solid	Glass	4°C	4 oz	7 days
TCL SVOCs	SW846 8270C	Solid	Amber Glass	4°C	8 oz	14 days (solid)/ 40 days analysis
TAL Metals	SW846 6010B	Solid	Glass	4°C	8oz	180 days all other metals
TPH DRO and ORO	SW846 8015B	Solid	Amber Glass	4°C	4 oz	14 days (solid)/ 40 days analysis
Oil & Grease	SW846 9071B/EPA 1664	Solid	Glass	4°C	8 oz	14 days (solid) 40 day analysis

This addendum also includes a change in the turnaround times for the analytical results requested for near shore oil samples to a 5-day turnaround time.

The remaining requirements of the QASP are still in effect.