

Pre-Assessment Phase Water Sampling for NRDA Purposes in Louisiana

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Overview

The Louisiana Department of Environmental Quality (LDEQ), as lead of the Nearshore Sediment and Water Sampling Technical Working Group (TWG), is conducting water sampling in the nearshore area in interior coastal marshes within the state of Louisiana for the purposes of evaluating exposure and potential Natural Resource Damage Assessment (NRDA) injury to the nearshore water resources as a result of the BP Deepwater Horizon spill. The objective of this sampling effort is to collect water samples at sites of known oiling in an effort to document conditions in the water in interior coastal marshes at locations impacted by the BP Deepwater Horizon spill and evaluate the potential for exposure and injury. Sampling locations will be selected by utilizing Shoreline Cleanup Assessment Teams (SCAT) data, Shoreline pre-assessment information, and other relevant and timely information in order to determine areas of oiling where water sample collection may take place. Baseline water samples will be used to represent conditions in areas associated with no oil observations.

This plan specifically addresses the following:

1. **Purpose and objective.** This section describes the overall purpose and need for pre-assessment water sampling to collect samples at locations representative of oiling.
2. **Sampling locations.** This section describes the process for selecting locations of pre-assessment water sample collection.
3. **Sample numbers.** This section outlines the number of samples to be collected for pre-assessment sampling.
4. **Equipment and materials.** This section describes the equipment needed to conduct the sampling.
5. **Safety.** This section describes the training requirements of sample collectors necessary for the collection of water samples under this plan.
6. **Water sampling guidelines.** This section outlines the water sampling guidelines for pre-assessment.
7. **Data management.** This section describes the data management processes related to transfer of data from field crews to upload and storage.
8. **Data deliverables.** This section describes the delivery of data from the analytical laboratory to the Trustees.

Attachments

A: Resources and Budget

1. Purpose and objective

Water resources provide habitat for fish, aquatic invertebrates, and other aquatic organisms as well as recreation and drinking water for humans. Water may serve as a pathway of exposure to aquatic organisms as well as land based organisms such as birds and other terrestrial organisms that come into contact with the water in the nearshore area.

The Nearshore Sediment and Water Sampling Technical Working Group (TWG) is developing this Louisiana specific plan for the purpose of conducting pre-assessment water sample collection (Note: pre-assessment sample collection for sediment will be addressed as an addendum to this plan). These samples are part of the Pre-assessment Phase of the Natural Resource Damage Assessment (NRDA) and include ephemeral data, i.e. data that is anticipated to change or disappear within a relatively short period of time. The samples collected pursuant to this plan will provide information on conditions in the water in areas impacted by the spill and will inform a decision on whether to conduct restoration planning under Section 990.42 of the Oil Pollution Act (OPA) regulations. These data may also be useful to the TWG in performing future assessment activities. National Oceanic and Atmospheric Administration (NOAA) technical NRDA guidelines developed for the BP Deepwater Horizon incident will be followed. Guidelines are the same for all samples whether collected before, during, or after potential impact from the offshore oil source. These guidelines will be followed to ensure water sample collection is consistent with other sample collections that have occurred or may occur pursuant to other NRDA work group activities.

The objective is to collect water samples from nearshore coastal areas in order to evaluate the exposure and potential for injury due to oiling based on conditions in the water and to assess whether to conduct restoration planning. Water samples will be analyzed for the presence and concentration of saturated hydrocarbons/total extractable hydrocarbons (SHC/TEH), polycyclic aromatic hydrocarbons (PAH), and volatile organic compounds (VOC).

2. Sampling locations

Sampling locations include nearshore coastal marsh areas across southern Louisiana in oiled areas. Sampling locations are selected by utilizing the best available information on areas of known oiling. SCAT information, pre-assessment data collected by the Shoreline TWG and/or other TWGs, and any other timely and relevant information on areas of known oiling will be mapped using GIS.

Sampling sites for water sample collection will be identified in areas that have been impacted by the spill and will include sites that are being sampled or have been sampled for pre-assessment activities by other NRDA TWGs, such as those by the Shoreline TWG for Pre-Assessment Marsh/Shoreline Data Collection as these sites provide additional data collection and information on oiling. Areas documented as being Heavy and Moderate oiling through SCAT will be the primary focus of water sample collection; however, areas receiving other degrees of oiling such as Light and Very Light may also be sampled. In addition, water samples may be collected in areas where oiling has been indicated but where SCAT was not conducted, such as identified

through other assessment sampling activities of other TWGs. Conditions at no oiling observed areas will default to baseline conditions (as documented through the Baseline sampling effort).

Field logistics will be considered when selecting sampling sites including but not limited to accessibility of the area to the sampling crew and equipment, ongoing response operations, and tidal and other weather conditions. GPS coordinates where water samples were taken at the sampling sites (as listed on the field data collection form and other field documentation) will be used to develop a pre-assessment water sampling site listing and associated GIS files.

Identified oiled sites to be sampled and the sites sampled will be mapped using GIS and may be considered in the selection of future sampling locations. It is recognized that sample site selection will be an adaptive process as newer information on areas of oil impact, degree of oiling, as well as areas experiencing re-oiling will be incorporated into future sampling location selection as appropriate. Once the variability of the water sample data has been evaluated through review of the data set, the sampling effort may be relaxed if variability is shown to be minimal; whereas, the sampling effort may be increased if necessary to reduce variation.

On average, two to four sites will be sampled by each field crew per sampling day. It is estimated that two crews will conduct sampling on a given day for a total of up to eight sampled sites per day. The total number of sampling locations will depend on the degree and spatial extent of oiling as observed through SCAT, pre-assessment activities conducted by other TWGs such as Shoreline, and other relevant information, and may ultimately depend on logistical considerations (such as vessel access to nearshore areas).

3. Sample numbers

The total number of samples collected for pre-assessment will depend upon the areas confirmed to be impacted through information from response operations, SCAT, and other relevant and timely information on areas of oiling. Heavy and Moderate oiling areas will be a priority for this sampling; however, areas of Light and/or Very Light oiling will also be sampled as resources allow.

The goal is to sample a minimum of 30 samples from sites representative of Heavy oiling. A minimum goal of 30 samples from Moderate oiling areas will also be collected. A minimum goal of 30 samples from each the Light and also Very Light oiled areas may also be sampled. In addition, water samples may be collected in areas where oiling has been indicated but where SCAT was not conducted, such as identified through other assessment sampling activities of other TWGs or other available information. Three sets of water samples will be collected at each sampling site.

4. Equipment and materials

The equipment and materials needed to conduct water sampling by the Nearshore Sediment and Water Sampling TWG is discussed below. The number of sampling crews may vary depending on the size of the sampling area and the available personnel and other resources. The number of boats and vehicles and the amount of equipment and materials needed for each sampling crew may also vary; for example, more than one vehicle and/or boat may be needed for each sampling crew depending on space limitations encountered when transporting the necessary equipment, materials, and crew and the space needed on the boat to collect and process samples in the field. Cost estimates for the project are presented in Attachment A.

For sampling activities conducted by Nearshore Sediment and Water Sampling TWG, the equipment and materials typically needed for each sampling crew includes:

- 3 LDEQ Employees
- Vehicle
- Boat (LDEQ boat; however Vessels of Opportunity (VOOs) may be utilized as needed)
- Compatible GPS Unit
- Camera
- Field Log Book
- Field Forms
- Field Maps
- Appropriate Personal Protective Equipment (PPE) and safety equipment
- Sampling equipment (ice chests, etc.)
 - Including cleaning and decontamination supplies
- Sample bottles (obtained from a Sample Intake Center (SIC))

5. Safety

All lead personnel will be 40 hr HAZWOPER trained and will have completed any other training modules required by Incident Command (IC). All other personnel will be at least 24 hr HAZWOPER trained and will have completed any other training modules as required by IC. Float plans will be filed with the IC for each day's activities on the water. Vessel operators and passengers must be trained according to LDEQ requirements. All necessary PPE will be used. Non-LDEQ personnel wishing to participate will be required to undergo safety training and sign an indemnity waiver prior to boarding any State of Louisiana vessels.

6. Water sampling guidelines

The following section outlines the water sampling guidelines.

6.1 Sampling Objectives

- Site Locations
 - To collect water samples at sites representative of various levels of oiling

- Sample Collection
 - To document the presence or absence of oil.
 - To determine the concentration and source (“fingerprinting”) of any oil compounds in the nearshore water samples collected.
- Sample Integrity
 - To maintain custody and integrity of the sample(s) during sampling, transport, and storage.

6.2 Standard Guidelines for Collection of NRDA Samples

- The LDEQ NRDA water sampling teams will be trained in and will use the NRDA Research Planning FTP website to generate all field data forms.
- The NOAA documentation can be located at the Research Planning FTP website located at [REDACTED]
 - The username and login will be provided to the sample collectors.
 - The following directory contains the sample guidance [REDACTED]
- All sampling will follow the NOAA Guidelines For Collecting NRDA Samples, which include the following documents:
 - NRDA Field Sampler Data Management Protocol
 - NOAA Field Forms, Printouts and User Guide
 - NOAA Field Sampling Form User Guide
 - NOAA Field Sample Information and Chain of Custody (COC) Forms to generate the following:
 - NRDA Chain of Custody Form
 - NRDA Sample Collection Form Oil/Tarball/Water
 - Field Validation Documents
 - Basic GPS Skills and Management
 - NRDA Field Photography Guidance
 - NOAA NRDA Trustees Photo Logger Form
 - Shipping and Sample Intake Logistics
- Any deviation from these methods must be recorded in the field notes.
- It is the sample collectors’ responsibility to monitor the Research Planning FTP website to ensure current guidelines are being followed.
- The NOAA NRDA guidelines referenced above will be followed in order to ensure that quality data is collected in the field.

6.3 Water Sample Collection Guidelines

- Water samples will be grab samples taken at a depth of fifteen (15) cm below the water's surface.
- Three sets of water samples (see Section 6.4 for list of bottles for sample collection) will be collected along a 100 ft transect parallel to the shoreline:
- Transect will be located at first accessible point from the shoreline. Samples are collected from water depths typically ranging 2 to 5 feet. Distance from shoreline may vary based on water depth and other conditions, such as presence of boom. Conditions at a site that alter the distance will be noted in field log.
 - Collect the 1st set of water samples at approximately the central point
 - Collect the 2nd set of water samples at a location approximately 50 ft from that point along the shoreline
 - Collect the 3rd set of water samples at a location approximately 100 ft in the opposite direction along the shoreline (which is equivalent 50 ft from the central point)
- Refer to the NOAA guideline documents on collecting shallow subsurface water sampling located at the following directory (/Home/Trustee Private Communications/Sample_Data/0_Sample_Guidance).
 - NRDA Shallow Subsurface Water Sampling Protocol
- Any deviations from these protocols must be noted in the field notes.

6.4 Water Sample Parameter and Analytical Method, Sample Volume, and Container

Refer to the most recent version of the MC 252 Analytical Quality Assurance Plan (QAP) for more details.

Parameter and Analytical Method	Sample Quantity and Volume	Container
Saturated Hydrocarbons/Total Extractable Hydrocarbons (SHC/TEH) ¹ by GC/FID	1-1 liter glass jar ^{2,3}	Glass containers, certified-clean organic-free (solvent rinsed), with Teflon- or aluminum foil-lined lids
Polycyclic Aromatic Hydrocarbons (PAH) by GC/MS-SIM, including fingerprinting analysis on a minimum of 10% of samples	1-1 liter glass jar ^{2,3}	Glass containers, certified-clean organic-free (solvent rinsed), with Teflon- or aluminum foil-lined lids
Volatile Organic Compounds (VOC) ⁴ analysis by GC/MS	3-40ml vials with Teflon septa	Glass vials with Teflon septa

¹SHC/TEH listed as THC in the Nearshore Sediment and Water TWG Baseline Sampling Plan.

²Samples will be collected/preserved in a manner to minimize light exposure.

³Field blanks will be collected at a minimum rate of 5%.

⁴Trip blanks will be collected at a minimum rate of 5%.

7. Data management

The NOAA Data Management Mobile Teams will upload data from all field activities and ship the samples to the appropriate laboratory(ies). All sampling data; including GPS files, photos, field collection forms, and Chain of Custody (COC) information; are to be uploaded by the end of the day in which they were sampled. Sample and analytical data will be managed by the Data Management Team throughout the NRDA process.

8. Data deliverables

The laboratory will deliver sample results within NOAA directed timeframes and follow all NOAA Analytical Quality Assurance Plan (QAP) directives. All data will be captured in NOAA approved forms and formats and all data uploads will be synchronized and follow NOAA requirements. LDEQ will utilize the Louisiana-retained Information Technology (IT) contractor to ensure compatibility of all databases, NRDA formats/guidelines, and to expedite data transfer. Summary reports may be prepared by the LDEQ project manager and shared with the appropriate interested parties.

Attachment A: Resources and Budget

Sampling is estimated at four sites per crew (three persons per crew) per day and these cost estimates are based on that scenario. However, the actual number of sites sampled per crew per day will be dependent on conditions in the field and other logistical considerations, such as distance to travel to a sampling area etc., related to sampling efforts.

Resource estimates for water sample collection are as follows:

Item	Estimated Cost for 90 days
LDEQ Boats: \$450/boat/day	\$81,000.00 (2 boats per day)
LDEQ Project Management: \$91.14/hr	\$16,405.00 (2 hours per day)
LDEQ Field Personnel (6): \$56.76/hr*	\$459,756.00 (15 hours per day)
<u>Estimated Total Cost</u>	<u>\$557,161.00</u>

**Subcontractors may be utilized if LDEQ personnel and equipment are not available*

NOTE: Space will be provided for 1 (one) BP representative and 1 (one) Federal trustee on all sampling vessels. Non-government personnel will be required to sign an indemnity waiver to participate on State of LA vessels. Vessel operators and passengers must be trained according to LDEQ requirements.