

# IAP Cover Sheet

**Incident Name:**

## Mayflower Pipeline Incident

Operational Period to be covered by IAP:

Period 4 (4/4/2013 07:00 - 4/5/2013 07:00)

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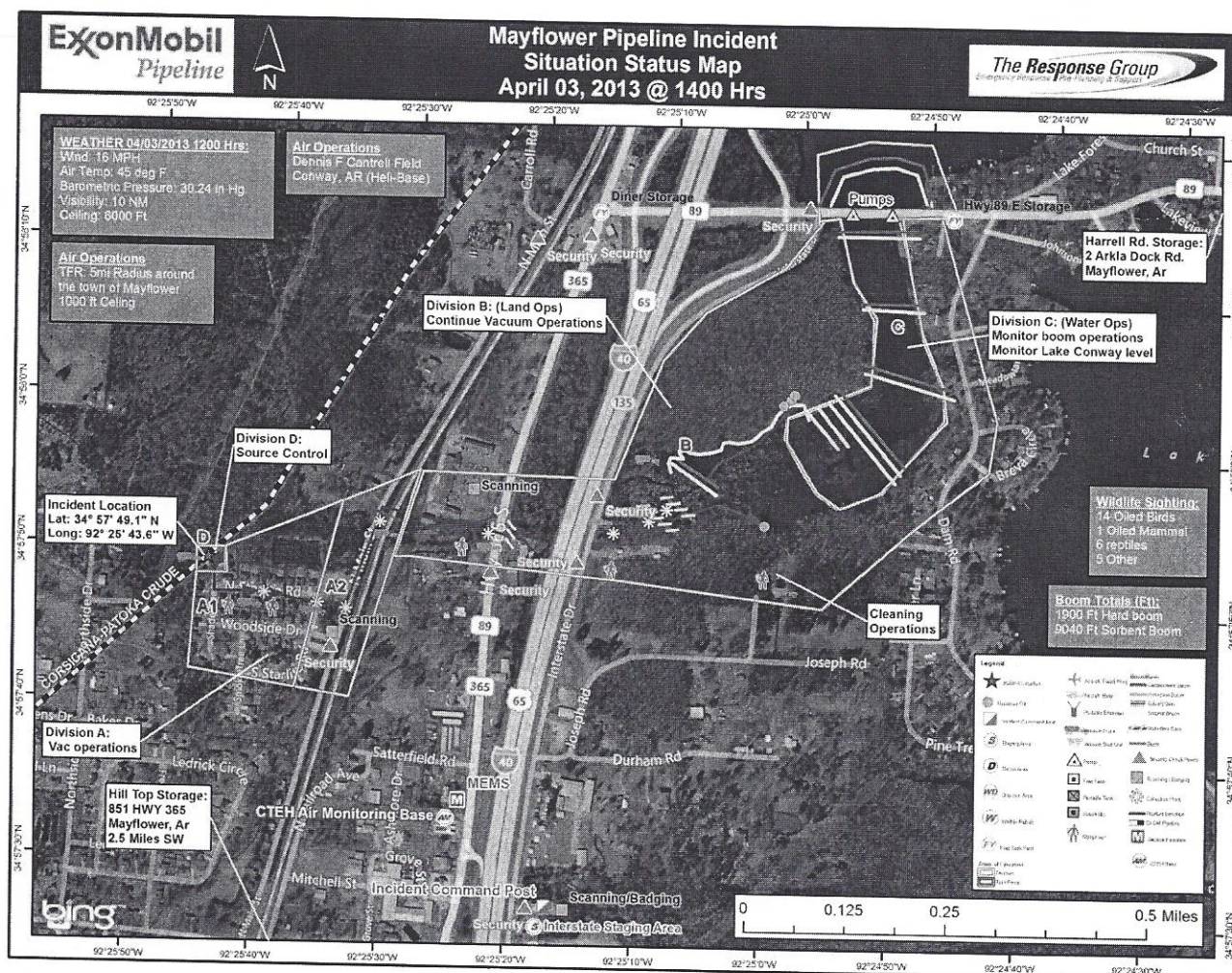
# Incident Action Plan

## Soil Sampling and Analysis Plan

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## IAP Cover Sheet

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**ExxonMobil Pipeline Company**

**Soil Sampling and Analysis Plan**

Mayflower Pipeline Incident  
Mayflower, Arkansas

April 1, 2013

Version 1.0

Surface Soil Sampling and  
Analysis Plan  
Mayflower Pipeline Incident  
Mayflower, Arkansas

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**1. Background**

On March 29, 2013, a subsurface pipeline owned by ExxonMobil Pipeline Company (EMPCo) experienced a crude oil release in Mayflower, Arkansas (Mayflower Pipeline Incident). The released crude oil was controlled shortly after the release was discovered. The Unified Command (UC) comprised of representatives from County, State, and Federal agencies and the responsible party (RP) was established on March 29, 2013 to manage the incident.

**2. Purpose**

This Sampling and Analysis Plan (SAP) is for the analysis of soil samples collected from properties oiled. The soil samples will be analyzed for petroleum-related compounds associated with crude oil. The soil sample analytical results will be used to characterize the nature and extent of residual oiling in soil following completion of clean-up activities at the properties. The soil sample analytical results will also be used to determine whether subsequent subsurface soil sampling is required to further evaluate the nature and extent of residual oiling.

This SAP will officially be implemented after approval by the UC; however, in practice this SAP will be implemented immediately based on the recognized urgency to collect samples. No sampling will occur under severe weather or other environmental conditions that may create unsafe working conditions.

**3. Soil Sampling Scheduling and Property Owner Communications**

Sampling will be conducted following clean-up operations. Following clean-up activities, ExxonMobil or an ExxonMobil representative will contact the property owner(s) to schedule a time for sampling to take place. Soil samples will be collected as described in this SAP and sent to a laboratory for analysis. An ExxonMobil representative or environmental professional will provide the property owner(s) with a sampling report that will summarize the laboratory results.

**4. Determination of Sample Collection Density and Distribution**

Three different scenarios are anticipated that may require soil sampling

- surficial soil sampling on oiled residential properties
- surficial soil sampling in oiled riparian areas
- bottom and side-wall soil sampling in soil excavations.

**4.1 Residential Yards**

Residential yards will be sampled following completion of clean-up operations. Oiled areas of residential yards will be sampled according to the guidelines in Table 1. Soil sampling locations will be identified using a 25-foot by 25-foot sampling grid, and one 5-point composite surface soil sample will be collected from each grid cell. One 5-point composite background surface soil sample will also be collected from an un-oiled area of each yard, if such an area exists. If no un-oiled area exists on the subject property, background samples will be collected from an un-oiled area of an adjacent property. Soil sample locations will be located and recorded using a Global Positioning System (GPS) device.

**Table 1 – Sampling Density and Distribution Summary**

Size of Oiled Area on Subject Property	Sample Unit Size	Total Number of Samples
Residential Yard	25' x 25' Grid	1 Composite Sample per Grid
1-5 acres	1 acre	1 to 5 Composite Samples
5-10 acres	2 acres	3 to 5 Composite Samples
10-20 acres	4 acres	3 to 5 Composite Samples
More than 20 acres	N/A	Maximum of 10 Composite Samples

**4.2 Riparian Areas**

Sampling of riparian areas will be performed after clean-up operations have been completed on the subject property. Areas of investigation will be delineated and sampling units will be based on the guidelines in Table 1. Sample locations will be located and recorded using a GPS device.

Within each sampling unit, 5 discrete soil samples will be collected and composited (5-point) to form one composite soil sample for each sampling unit. One 5-point composite background surface soil sample will also be collected from an un-oiled area within each riparian area to be sampled, if such an area exists. If no un-oiled area exists for a riparian area on the subject property, background samples will be collected from an adjacent property.



#### **4.3 Excavations**

Sampling of excavations, if present, will be performed after oil clean-up operations have been completed on the subject property. An excavation, for the purposes of this SAP, will be defined as a soil removal area with sidewalls. Sampling units for the bottom of excavation will be based on a 25-foot by 25-foot sampling grid. One 5-point composite sample will be collected per sampling grid. Sampling units for side-wall samples will be based on 25 linear foot segments. One 5-point composite sample will be collected per sampling segment (i.e., every 5 linear feet, approximately). One 5-point composite reference surface soil sample will also be collected from an un-oiled area on the subject property. If no un-oiled area exists for the subject property, reference samples will be collected from an adjacent property. Sample locations will be located and recorded using a GPS device.

#### **5. Soil Sample Collection and Analysis**

Soil sample analytical results will be used to characterize the nature and extent of residual oil in soil for each sampling unit (i.e., residential property, riparian area or excavation). As described above, background composite soil samples will also be collected to establish the background soil conditions for the subject property.

Five discrete surface soil samples will be collected to a depth of no more than 2 inches for each sampling unit using a metal or plastic spoon or trowel. One of the five discrete surface soil samples collected for each sampling unit, biased to the sample with the heaviest staining, will be selected and a portion of that sample will be placed in a volumetric sampling device (to prevent headspace loss of volatiles from the sample). The volumetric sample container for each sampling unit will be submitted for laboratory analysis for volatile organic compounds (VOCs) by USEPA Method 8260B.

The remaining sample volume from the five discrete soil samples from each sampling unit will then be combined to form a composite sample. Composite sampling is a technique whereby multiple spatially discrete samples, are combined, thoroughly homogenized, and treated as a single sample. Compositing in the manner outlined in this plan, which combines five surface soil samples, increases the ability to detect areas of elevated constituent of concern concentrations by increasing the number of locations sampled. The discrete surface soil samples for each sampling unit will be combined into a secondary container (e.g., glass or aluminum container) and homogenized in the field with a metal or plastic spoon or trowel. The sampling technician will transfer the composite sample material into laboratory supplied sample jars. The composite samples will be submitted for laboratory analysis of polynuclear aromatic hydrocarbons (PAHs) by USEPA SW-846 Method 8270 SIM. Table 2 shows a summary of the analytical methods used to characterize soil samples.

For residential and riparian areas, in addition to the composited surface soil samples required by the SAP, a soil core will be collected, logged, and sampled to characterize the subsurface extent of potential oil and oil-related constituents in soils. One soil core will be collected from each area targeted for composite soil sampling (biased to the most heavily stained portion of the area). The core will be collected using manually operated macro-core or hand auger equipment. Soil cores will be collected from ground surface to 2 feet bgs. Soils will be logged for soil characteristics and screened with a calibrated photo-ionization detector for total volatile organic compounds. A sample from each 6-inch segment of the soil core will be collected and analyzed by the methods in Table 2.

**Table 2 – Analytical Methods to Characterize Soil Samples**

Parameters	Analytical Method
Volatile Organic Compounds (VOCs)	USEPA Method 8260B
Polynuclear Aromatic Hydrocarbons (PAHs)	USEPA Method 8270 SIM

## **6. Sample Handling Procedures**

Samples will be placed in laboratory supplied sample containers, appropriate for the intended analysis, labeled with sample identification number, sample depth, sampler name, sample date, analysis and methodology requested, and time of sample collection. The samples will then be immediately placed in a cooler on ice pending laboratory analysis. Samples will be packaged, labeled, retained on ice, and documented in an area which is free of oiling and provides for secure storage. Custody seals will be placed on each sample containing cooler, and chain-of-custody procedures will be maintained from the time of sample collection until arrival at the laboratory to protect sample integrity.

## **7. Sample Labeling Procedures**

Sample containers will be clearly labeled with the following information:

- Unique sample identification
- Sample Type (discrete or composite; matrix)
- Sample Depth (e.g., 0-2 inches)
- Sampler name



- Date/time sample collected
- Analysis to be performed

## **8. Quality Assurance**

Sample collection and analysis will be conducted in accordance with the Quality Assurance Project Plan (QAPP) to be prepared for this incident.

### **8.1 Equipment Calibration**

Instruments requiring calibration, which may be used in the collection of soil samples, will be calibrated in accordance with the respective manufacturer's specification.

### **8.2 Field Duplicate Samples**

Duplicate samples will be collected and analyzed at a frequency of one per each sample delivery group (SDG) of up to 20 field samples.

### **8.3 Matrix Spike/Matrix Spike Duplicate Samples**

Matrix spike/matrix spike duplicate samples will be collected and analyzed at a frequency of one per each SDG of up to 20 field samples.

### **8.4 Equipment Rinse Blank Samples**

The surface soil samples will be collected using disposable sampling equipment which does not require equipment decontamination. If equipment decontamination is necessary, equipment rinse blank samples will be collected at a frequency of one pre each SDG of up to 20 samples, with a minimum frequency of one per each day when equipment decontamination is conducted.

## **9. Decontamination Procedures**

If necessary, non-disposable sampling equipment will be thoroughly decontaminated prior to reuse, using an Alconox® or equivalent wash and de-ionized water rinse.