

**Sampling Plan**  
**Barton Springs Area, Austin, TX**  
**January 15, 2003**

## APPROVAL PAGE

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## **Introduction**

Sediment and water sampling and sample handling procedures are covered in full by the Surface Water Quality Monitoring (SWQM) Quality Assurance Project Plan (QAPP) and Methods Manual. General quality systems are described in the Field Operations Division (FOD) QAPP (Standard Operating Procedures [SOPs] Appendix 2). Field note requirements, safety requirements, and general investigation procedures are further outlined within the FOD - SOP documentation. This sampling plan is meant to provide more detail as it pertains to this specific project.

This plan is intended as a guide. Unforeseen conditions which may arise in the field or additional information obtained prior to sampling may necessitate modifications to this plan.

## **Project Description**

The FOD QAPP provides a framework and basic protocol for establishing the quality assurance/quality control program. More detailed procedures and method specific acceptance criteria are provided in the individual SOPs, the SWQM Procedural Manual and this project specific monitoring plan. This document establishes project specific policies, procedures, and data quality objectives for the **Barton Springs Area Sampling Project scheduled during January 2003.**

### **Project Goals**

This project involves water, soil, sediment, and materials sampling in Barton Springs and in the immediate watershed in this area. Of specific interest, is drainage area between the Barton Hills Park Place Apartments and Barton Creek. Elevated sediment levels of benzo(a)pyrene have been reported in a natural drainage channel just down gradient of the parking lot. The goal of this sampling exercise (along with historical data and data collected by other entities) is to delineate the extent of this apparent contamination and to determine a probable cause or source of the contamination.

### **Background**

Elevated levels of polynuclear aromatic hydrocarbons (PAHs) have been detected in soil/sediment samples collected in some tributaries to Barton Springs/Barton Creek, as well as in the sediment of Barton Springs pool. Historical data indicate that some of the highest concentrations have been measured in the eroded channel of a short, intermittent tributary directly upstream of Barton Springs. The head of this tributary appears to be at the Barton Hills Park Place Apartments. A cursory site visit on January 9, 2003 to this apartment complex indicated that the asphalt parking lot had one major discharge point and at least two minor discharge points. The intermittent tributary starting at the major discharge point had multiple pieces of asphalt of varying sizes. The parking lot appears to have been sealed at some point(s) and in potential depositional areas there was a fine black substance that appeared to have come from the parking lot.

### **Sampling Approach**

Based on historical data, PAHs are the primary target compounds, with metals and pesticides of secondary importance as shown in Table 1. The primary media of concern is soil and sediment with actual water samples

of secondary concern given that elevated levels have not been detected in the actual water column. With this information in mind, a sampling approach was designed to help delineate the area of potential contamination and to attempt to identify the suspected source of the observed elevated levels. It is anticipated that a total of approximately 40 soil and sediment samples and three water samples will be collected. A map of the general area to be studied is located in Appendix B for reference. It is anticipated that samples will be collected in the following areas:

Soil/sediment samples will be collected at:

- Each of the three major points of discharge from the parking lot with four (three samples and a field split) samples being collected at the major discharge point and two samples at each of the secondary points. These three points are marked on the map in Appendix B.
- Besides the two discharge locations near the northeast corner of the complex there is a runoff location from the apartment parking lot on the southeast corner where it fronts Barton Hills Drive. Samples of the sediment that runs off the parking lot and through some drainage holes in the rock will be taken. The two soil samples should be representative of the bare area between the wall and the curb. In addition, a sample should be collected of the fine black powdery sediment deposited in the parking lot or nearby concrete in this area. One of the samples near the other discharge points will include an area of darkened soil observed during the preliminary site visit.
- Approximately six samples will be collected along the intermittent tributary in depositional areas. At least two of these samples will be collected above and two below the confluence of the primary discharge drainage and secondary drainage channels. The last set of two samples will be collected in the intermittent tributary just above the confluence with Barton Creek. These sample sets are not duplicates but should be taken in the same general area, within three feet of one another to get an idea of spatial variability.
- In order to better understand the contribution of the parking lot materials to any measured concentration in the soil/sediment the following samples will be collected:
  - A sample of the fine black dust-like material found in areas where water might stand or congregate.
  - A sample of the parking lot asphalt.
  - A sample of the larger pieces of asphalt material present in the intermittent tributary.
- Samples will be taken at the Waterfall Grotto tributary near Spyglass Drive given that elevated PAH levels have been measured in this area as well. At least four samples will be collected in this area with two being collected in the tributary near the confluence with Barton Creek, and two collected up gradient in the tributary.
- If any significant potential sources, including parking lots, are found directly upstream on Barton Creek from Waterfall Grotto then additional samples will be taken to characterize these sources.
- One sediment sample from the submerge beach area on the south side of Barton Pool will be collected.

Background or comparison samples should also be collected as follows:

- Two samples will be collected up gradient of the apartments/parking lot. These will be collected between Barton Hills Drive and the parking lot, or as close to the road as possible on the west side of the apartment complex.

- At least two samples will be collected in the intermittent tributary directly to the west of the apartment complex which starts behind a single family residence and should be indicative of levels in similar soil conditions, including some erosion, but not downstream of a large parking lot.
- At least two samples will be collected from a depositional area from a large non-asphalt parking lot for comparison. On the other side of Barton Creek, on the western edge of Zilker Park is a city recreation center. Immediately off the park property is a commercial building complex. Between the recreation center and building parking lot, which is concrete, is a small, grassy retention pond. A sample of the dark sediment on the surface of the soil/grass in the retention pond will be taken. Even though there is no direct discharge to Barton Creek (according to the complex manager), the runoff from all of the parking lots in the complex is routed to a treatment system under one of the parking garages and then pumped to Dry Creek. The sediment should be representative of oily runoff from a concrete parking lot versus the asphalt/coated parking lot of the apartment complex.
- Two samples will be collected from the soil near Barton Creek directly across from its confluence with the intermittent tributary at the apartment complex.
- One sediment sample will be collected down gradient of the same apartment complex at a small spring that comes out from under the base of the bluff about 100 yards up Barton Creek from where the main runoff channel for the parking lot is. The samples will be collected in a small, ponded area, approximately 10 -15 feet from where the spring starts.  
NOTE: Duplicate samples shall be analyzed in duplicate as well (nested duplicates) in order to obtain estimates of soil sampling and analytical variability.
- Background soil samples will also be collected near the Lost Creek area upstream of the area of interest and one other upstream point to be chosen in the field.

Water Samples

- One whole water sample will be taken from Barton Springs Pool.
- One sample and one duplicate will be taken between the upper Barton Springs Pool Dam and the gravel catcher dam.
- One sample will be taken on Barton Creek upstream of its confluence with the major run off channel from the Barton Hills Park Place Apartments.

**Table 1: Compounds of Interest and SOPs**

Primary Target Compounds	SOP(s)
Semivolatile Organics (PAHs)	Surface Water Quality Monitoring Procedures Manual Volume I
Secondary Target Compounds Metals	Water Sample Collection - Chapter 4
Pesticides/Herbicides	Sediment Sample Collection - Chapter 5

### **Sampling Design Limitations:**

1. The analytical results from soil and sediment samples are obtained from chemical extractions and should not be considered as representative of what might be seen in water runoff or in the water column.
2. This sampling design does not look at soil depth as a variable. If sampling results from this effort indicate concentrations of concern in the soil and water but do not indicate that the parking lot is a major contributor to this contamination, then TCEQ may need to consider profile sampling under or around this area.
3. The sampling design was developed prior to learning a complete site (and nearby site) history, additional sampling may be warranted as additional information is obtained.

## **Project Organization**

The TCEQ will conduct a sampling trip to the Barton Springs Area during January 2003 at the request of TCEQ upper management. Personnel from the TCEQ Regional Office (Region 11) and the Surface Water Quality Team will participate in the sampling event. The following are the project specific roles and responsibilities:

### **Project Leader - Mike Honeycutt**

The project team leader in this case is the agency contact for the project and is responsible for the overall coordination, data review, and interpretation.

### **Field Work Leader - Patrick Roque**

The field work leader is responsible for coordination of resources and staff in the field to accomplish these monitoring objectives.

### **Quality Assurance Section - Bernard Ray**

Duties are described in the Surface Water Quality Monitoring QAPP.

## **Data Quality Objectives**

Project data quality objectives (DQOs) are described in terms of accuracy, precision, sensitivity, and analytical data capture. The analytical data capture, defined as the percentage of samples successfully prepared and analyzed to the total number of samples analyzed, is expected to be better than 85 percent for all analyses. The remaining DQOs for the project should be consistent with those provided in the SWQM QAPP.

## **Sampling Methods and Requirements**

Table 2 lists the types of samples that are to be analyzed for this project, the appropriate sample media, the approximate sample volumes required for analyses (to ensure acceptable method sensitivity), sample preservation requirements, and maximum (sample) hold times.

Table 2: Summary of Sampling Methods

Analytical Parameter	Sampling Method	Sample Container	Location	Sample Collection Depth (feet)	Sample Volume	Sample Preservation	Media Hold Time (days)
<b>WATER SAMPLES</b>							
Semivolatile Organic Compounds (PAH) Analysis	SWQM Procedures Manual Volume I Water Sample Collection - Chapter 4	1 liter jar with teflon lined lid per sample type; must be prerinsed with hexane, acetone, or methylene chloride	Centroid of flow	1 foot	1 liter	Cool to 4 degrees C, dark	7 days
Metals	SWQM Procedures Manual Volume I Water Sample Collection - Chapter 4	250 milliliter HNO <sub>3</sub> cleaned plastic bottle	Centroid of flow	1 foot	1 liter	Preserved with 5 ml ultra-pure HNO <sub>3</sub> to pH<2	6 months
Pesticide/Herbicides	SWQM Procedures Manual Volume I Water Sample Collection - Chapter 4	1 liter jar with teflon lined lid per sample type; must be prerinsed with hexane, acetone, or methylene chloride	Centroid of flow	1 foot	3 liter	Cool to 4 degrees C, dark	7 days until extraction
<b>SEDIMENT/SOIL SAMPLES</b>							
Semivolatile Organic Compounds (PAH Analysis) Note - only organics mentioned	SWQM Procedures Manual Volume I Sediment Sample Collection - Chapter 5	9 ounce glass jar with Teflon lined lid; special treatment not required		Top ½ inch unless core sample is required	500 grams	Cool to 4 degrees C, dark	14 days
Metals	SWQM Procedures Manual Volume I Sediment Sample Collection - Chapter 5	9 ounce glass jar with Teflon lined lid; special treatment not required		Top ½ inch unless core sample is required	500 grams	Cool to 4 degrees C, dark	28 days
Pesticides/Herbicides	SWQM Procedures Manual Volume I Sediment Sample Collection - Chapter 5	9 ounce glass jar with Teflon lined lid; special treatment not required		Top ½ inch unless core sample is required	>100 grams	Cool to 4 degrees C, dark	14-28 days

## Analytical Method Requirements

All samples should be hand delivered to the agency contract laboratory (or subcontract laboratory such as Albion). A five day turnaround time should be requested as permitted within the agency contract. In general, soil and sediment samples should be analyzed according to SW-846 Method 8270C analytical method requirements, and the analyte list should specifically spell out that all applicable PAHs (including benzo(a)pyrene). Method 8081A should be requested for soil pesticide analysis including DDT, endrin, aldrin, DDD, DDE, and DDT. Water samples should be analyzed by 625 for PAHs and 605 for pesticides. Metals should be determined by SW846 6020A for sediment samples and 200.8 for water samples. The SWQM QAPP provides a more comprehensive discussion on the appropriate method selection for these samples.

## Distribution List

**Texas Commission on Environmental Quality**  
**P.O. Box 13087, Austin, Texas 78711-3087**

Mr. Steve Spaw, Division Director, Monitoring Operations Division, Office of Compliance and Enforcement  
Mr. David Brymer, Manager, Laboratory & Mobile Monitoring Section, Monitoring Operations Division, Office of Compliance and Enforcement  
Mr. Mike Honeycutt, Toxicology & Risk Assessment Section, Office of Permitting, Remediation, and Registration  
Ms. Jennifer Sidnell, Division Director, Field Operations Division, Office of Compliance and Enforcement  
Mr. Patrick Roques, Manager, Surface Water Quality Monitoring Team, Monitoring Operations Division, Office of Compliance and Enforcement  
Ms. Robin Cypher, Surface Water Quality Monitoring Team, Monitoring Operations Division, Office of Compliance and Enforcement  
Mr. Marshall Cedilote, Superfund Site Discovery and Assessment Program, Office of Permitting, Remediation, and Registration  
Mr. Bernard Ray, SWQM Program Quality Assurance Specialist, Quality Assurance Team, Compliance Support Division

### **TCEQ Regions:**

#### **Region 11**

Patti Reeh, Regional Manager, Austin  
Carolyn Runyan, Austin

## **Appendix A**

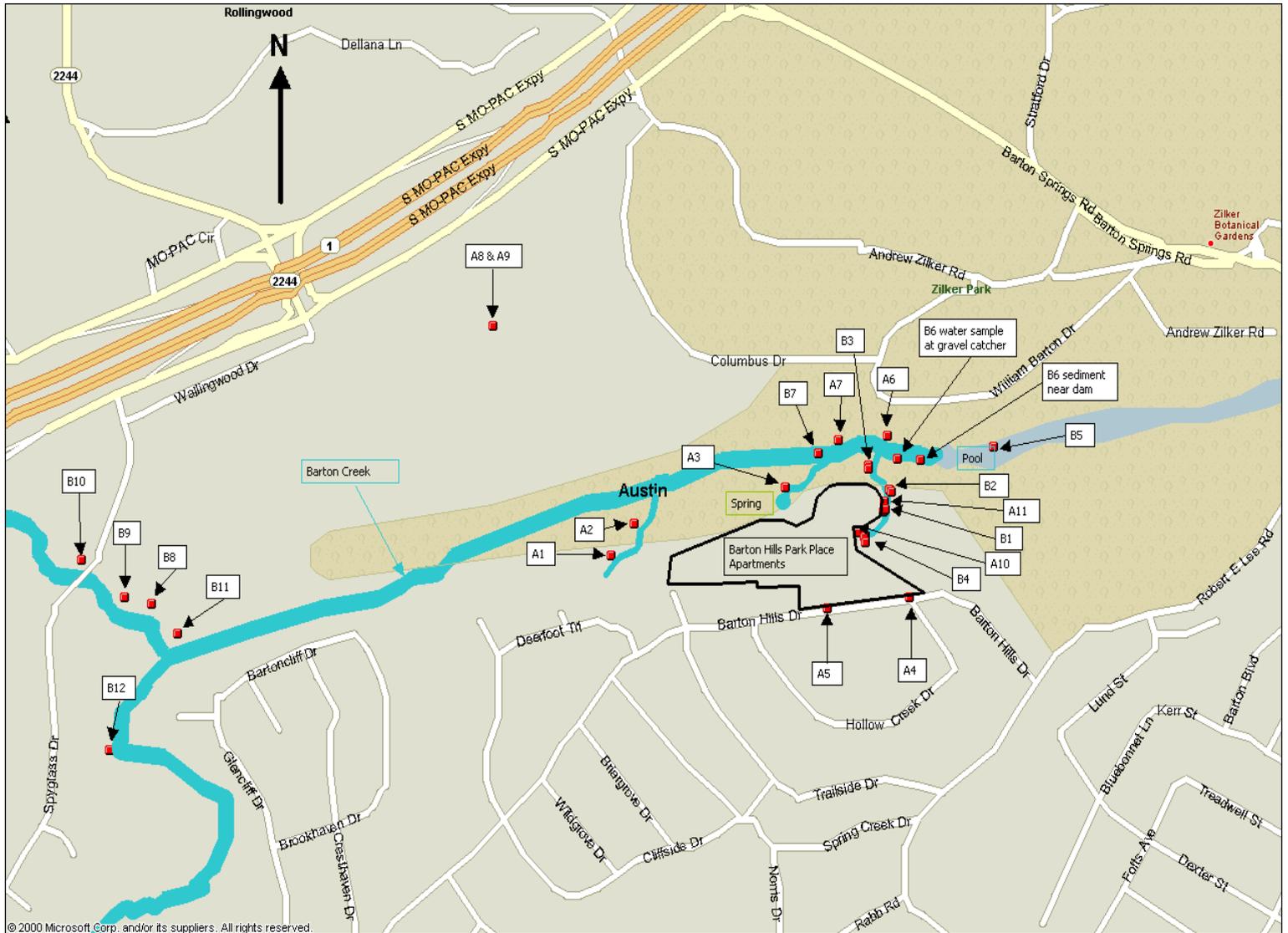
## Acronyms List Of Acronyms

DQO	Data Quality Objective
FOD	Field Operations Division
L&MM	Laboratory & Mobile Monitoring Section
PAH	Polynuclear Aromatic Hydrocarbons
QAPP	Quality Assurance Project Plan
QC	Quality Control
SOP	Standard Operating Procedure
SWQM	Surface Water Quality Monitoring
VOC	Volatile Organic Compound
TCEQ	Texas Commission on Environmental Quality

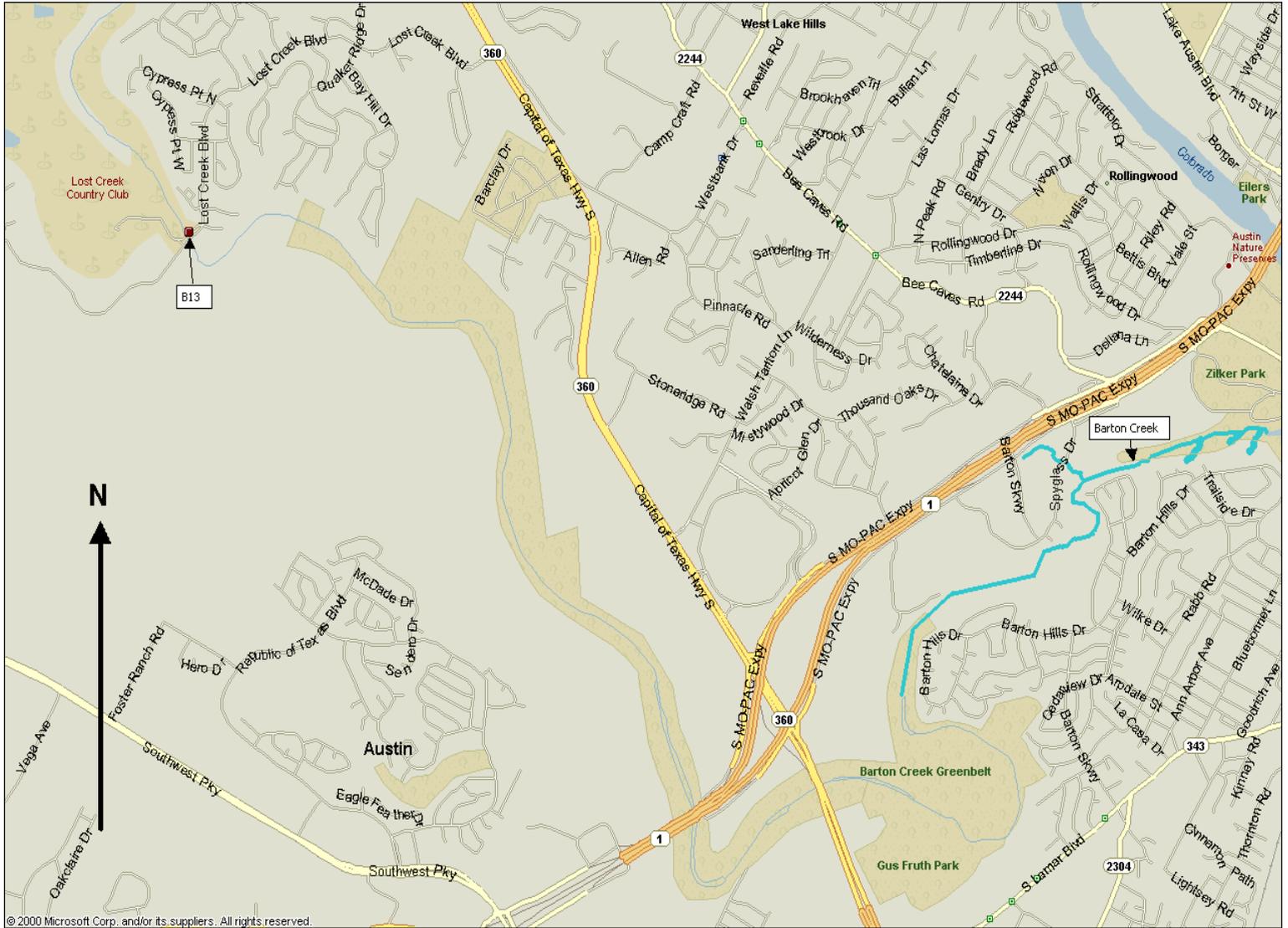
## **Appendix B**

### **Maps**

### Barton Springs Area Sampling Site Map - Zilker Park Vicinity



### Barton Springs Area Sampling Site Map - Lost Creek Site



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**Amendment #1  
Sampling Plan  
Barton Springs Area, Austin, TX  
January 21, 2003**

Justification: To collect additional water samples for analysis by other methods.

Water samples will be collected at the following locations:

- One whole water sample will be taken from Barton Springs Pool.
- One whole water sample and one duplicate will be taken approximately one meter above the gravel catcher dam above Barton Springs Pool.
- One whole water sample will be taken on Barton Creek approximately 30 meters upstream of its confluence with the major run off channel from the Barton Hills Park Place Apartments.

The samples will be analyzed for polynuclear aromatic hydrocarbons using Method 8270C.

Project Contact

Toxicology and Risk Assessment

Texas Commission on Environmental Quality

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Date

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