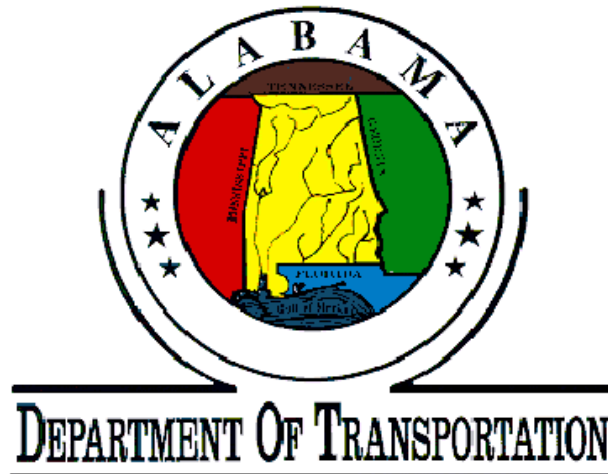


# **Addendum 11**

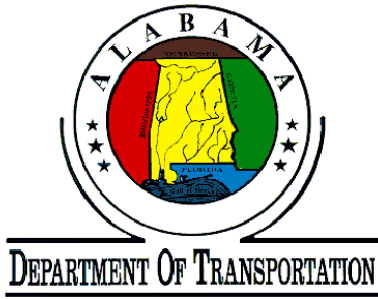
## **Vertical Characterization of Site-Wide TCE Concentrations**

### **Coliseum Boulevard Plume Investigation**



December 3, 2002

**Submitted to:**  
**The Alabama Department of Environmental Management**  
**Montgomery, Alabama**



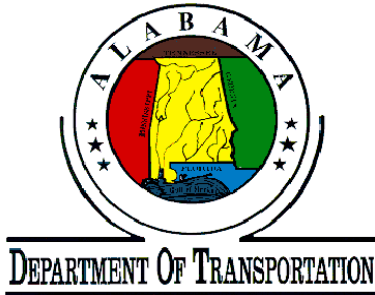
**Addendum 11**  
*Vertical Characterization of Site-Wide  
 TCE Concentrations*  
 December 3, 2002

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1	Proposed Additional Probeholes



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**December 3, 2002**

## **Introduction**

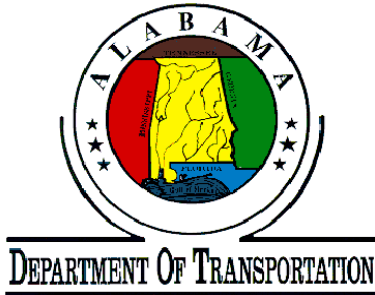
The following Work Plan is Addendum 11 to the Work Plan for Rapid Response, Interim Corrective Measures, and Comprehensive Site Assessment dated February 2001 to further characterize the horizontal and vertical extent of trichloroethene (TCE) concentrations in groundwater in areas where TCE concentrations are elevated.

## **Rationale for Selecting Vertical Characterization Locations**

The 34 locations proposed for vertical characterization are shown on Figure 1. These locations were selected based on the areal distribution of elevated concentrations of TCE in groundwater. As shown on Figure 1, groundwater in four areas at the site have contained concentrations of TCE greater than 1,000  $\mu\text{g/l}$  (micrograms per liter): 1) the Probehole 12 Area; 2) an approximately 12-acre area near the Alfa Residential property to the northeast of the Probehole 12 Area; 3) an approximately eight-acre area on the eastern side of Coliseum Boulevard south of the Kilby Ditch; and 4) an approximately 5,000 square-foot area on the eastern side of Coliseum Boulevard north of the Kilby Ditch. Based on existing data, these four areas appear to be separated by areas of lower TCE concentrations.

Information obtained from this work will be used to design the placement and screen interval for additional permanent monitoring wells, if necessary. The selection of the vertical characterization locations were based on the following objectives:

- To better define TCE concentrations between the four apparently separate areas noted above, and assess whether or not these areas are connected.
- To further refine the vertical distribution of TCE concentrations within areas containing greater than 1,000  $\mu\text{g/l}$  of TCE.
- To better delineate the areas where TCE concentrations may change over a relatively short distance.
- To evaluate areas where TCE concentrations are greater than 1,000  $\mu\text{g/l}$  and the density of samples is relatively sparse (e.g., the area adjacent to the unlined portion of the Kilby Ditch).
- To better define the lateral extent of areas containing TCE concentrations greater than 1,000  $\mu\text{g/l}$  (e.g., the area near North Boulevard and the northern end of Coliseum Boulevard).



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The proposed vertical characterization borings on Figure 1 are located within and between areas containing TCE concentrations greater than 1,000 µg/l. Those located between the 1,000 µg/l TCE areas will assess if these areas are connected. The proposed borings in the center of these areas will provide refined data on the vertical distribution of TCE. As shown from vertical characterization in the Probehole 12 Area, TCE concentrations vary considerably with depth. The proposed locations at the edges of the 1,000 µg/l TCE areas will be used to better delineate the outer boundaries of these areas.

**Technical Specifications**

Collection and Analysis of Groundwater Samples

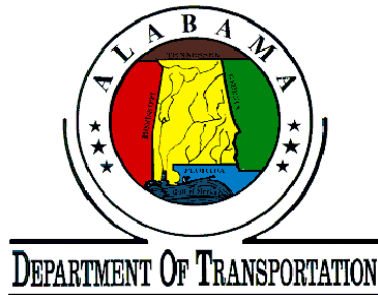
Groundwater samples will be collected using the procedures approved in Addendum 03 (Revision 3) – Investigation of Elevated Concentrations of TCE Near PH12, June 22, 2001. As with Addendum 03 (Revision 3), a soil conductivity probe will be used to identify the depth to the first distinct clay layer beneath the upper saturated zone prior to sampling activities. A Geoprobe® will be used to collect continuous soil cores from ground surface to the top of the first distinct clay layer.

Groundwater samples will be collected and analyzed in the same manner as approved in Addendum 03 with the following modification:

- Groundwater samples will be collected continuously from the water table to the top of the first distinct clay layer. Because the retractable screen of the Geoprobe® is approximately four feet long, groundwater samples will be collected every four feet, consistent with the vertical profiling conducted in the Probehole 12 Area.

As in the Addendum 03 investigation, all groundwater samples will be analyzed with a field Gas Chromatograph (GC) to obtain semi-quantitative information of TCE concentrations in groundwater. Detection limits for analysis of groundwater samples will be 1.0 µg/l for the following compounds:

Trichloroethene	1,1-Dichloroethene	Benzene	Chloroform
cis-1,2-Dichloroethene	1,1-Dichloroethane	Toluene	Carbon Tetrachloride
Vinyl chloride	1,1,1-Trichloroethane	Ethyl benzene	Ethylene dibromide
Tetrachloroethene	1,2-Dichloroethane	Total xylenes	



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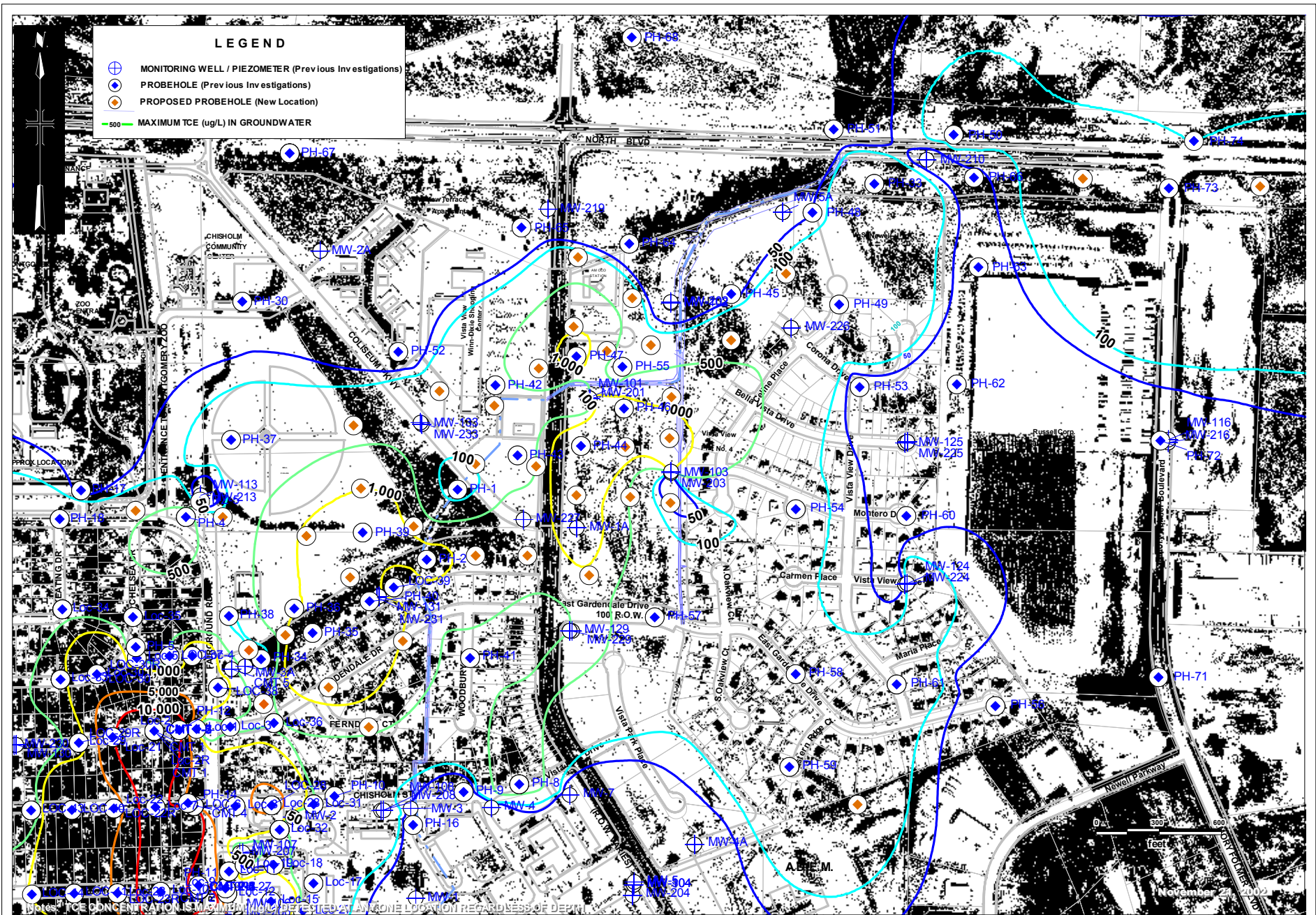
For approximately 10 percent of the groundwater samples analyzed with the field GC, duplicate groundwater samples will be collected for laboratory confirmation. These duplicate samples will be selected based on the results of the field GC analyses.

*Surveying*

A Professional Land Surveyor will survey the location and the ground surface elevation of each probehole to the nearest 0.01 foot.

*Schedule*

The vertical characterization work will commence within 30 days of approval of this Work Plan addendum by ADEM. It is anticipated that the work described in this addendum will be completed in approximately eight weeks of the start date.



ALABAMA DEPARTMENT OF TRANSPORTATION  
COLISEUM BOULEVARD PROJECT

**PROPOSED ADDITIONAL PROBEHOLES**

**FIGURE 1**