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**WORK PLAN FOR THE SOUTH GROUNDWATER
CONTAMINATION PLUME REMOVAL ACTION
PART 5 GROUNDWATER MODELING AND
GEOCHEMICAL INVESTIGATION FEMP**

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WORK PLAN

R-009-204.28

Enclosure 2

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**WORK PLAN FOR THE SOUTH GROUNDWATER
CONTAMINATION PLUME REMOVAL ACTION**

PART 5

GROUNDWATER MODELING AND GEOCHEMICAL INVESTIGATION

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

**U.S. Department of Energy
Fernald Field Office**

Revision 2

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at the PRRS public meeting provides the needed information to proceed with the proposed pumping of the Part 2 recovery wells. Data obtained from the hydropunching will help refine the data interpretations.

In the event that data indicate that uranium concentrations > 20 ppb exist south of the recovery well field capture zone, the FEMP may need to further evaluate the extent of the PRRS plumes. The geologic environment where the PRRS plumes are located appears to be favorable for using a soil vapor survey to further delineate organic contamination with a relatively high degree of certainty at very low cost. The clay-rich glacial overburden found at the FEMP site does not exist over much of the sand and gravel aquifer in this area of the South Plume. Volatile organic materials are all lighter than water and should migrate to the top of the water table. Relatively permeable alluvial deposits from the Great Miami River rest on the sand and gravel aquifer in this area. Vapors should tend to migrate upward through these sediments. The main factor that would limit the effectiveness of this type of survey would be a high moisture content of the soils. Generally, the higher the soil moisture, the lower the permeability with respect to organic vapors.

A semiquantitative soil vapor survey can be conducted with simple hand-held tools transported on a small four-wheel all-terrain vehicle which will result in minimum impact on private property. The survey would consist of driving a three-eighths-inch-diameter hollow rod to a depth of 60 inches with a slam bar hammer. The tube would be connected to the hollow rod and attached to a Foxboro 426 128 Organic Vapor Analyzer (OVA) calibrated to a methane standard. Soil vapor would be drawn through the OVA and a reading made in methane equivalents. This analytical device would provide a semiquantitative measure of the extent of the volatile organic plume. The soil vapor survey will be used only as a preliminary screening tool, and will not be used to determine the extent of the plume in question.

If a soil vapor survey is conducted, soil vapor readings would most likely be taken at 100-foot centers within the study area. If readings drop off dramatically between any two 100-foot stations, an additional reading half way between the two stations would be taken to refine the boundary of the plume. Data from the soil vapor survey would be plotted on maps to determine the extent of the volatile organic plume.

If a survey is conducted, the soil vapor survey technique will be tested by using the equipment to measure vapor levels in the soil at two locations near Well 2701, which reportedly has high levels of volatile contaminants. If the soil vapor technique does not detect vapors at these locations, the survey will be abandoned and a drilling and sampling program will have to be developed. If the vapor analysis detects organic vapors, this will provide a qualitative test that the technique will work in this environment.

6.0 PHASING OF FIELD WORK

This section outlines how the activities in Section 5.2 will be accomplished. The field activities will be conducted in four phases: