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PRIMARY DOCUMENT

Site Investigation Report for the Southwest Groundwater Plume at the Paducah Gaseous Diffusion Plant, Paducah, Kentucky

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Prepared for the
U.S. DEPARTMENT OF ENERGY
Office of Environmental Management

Environmental Management Activities at the
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Paducah, Kentucky 42001

managed by
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Southeast Corner. The investigation of the southeast corner of the C-720 Area consisted of two borings (720-107 and 720-108) placed through the parking lot adjacent to the C-720 Building loading dock (Fig. 2.2). Borings did not exceed 60 ft, and soil samples were collected at approximately 15 ft intervals. Sampling intervals were modified to reflect the MIP profile.

Samples collected from the two locations at the southeast corner of the C-720 area had very low levels of TCE with no associated degradation products. Location 720-107 had a maximum TCE level of 0.2 mg/kg at the sample interval ending at 29 ft, and Location 720-108 had a maximum TCE level of 0.046 mg/kg at the sample interval ending at 18.3 ft. These results indicate that the two locations were at the periphery of the source area defined in the WAG 27 RI Report. As discussed in the RI Report, the concentrations of TCE within the source area defined in the RI (sample Location 720-002) varied from 0.037 mg/kg at 5 to 8 ft bgs to 68 mg/kg at 20 to 21 ft bgs.

Contamination in the southeast corner was delimited by two locations, which have relatively low TCE concentrations. The observed VOC levels did not trigger the collection of contingency samples to define the DNAPL area. Neither metals nor radionuclide contamination was routinely detected.

4.2.3 Storm Sewer from the C-400 Building to Outfall 008 – Part of SWMU 102

The initial phase for the investigation of the storm sewer involved verifying the integrity of the storm sewer itself. Any breaks or cracks in the storm sewer could act as potential pathways for contamination. A video system was used to inspect approximately 3000 ft of the storm sewer from the east side of the C-400 Building to Outfall 008. The video indicated that the storm sewer had maintained its structural integrity. The actual physical properties of the storm sewer (diameter and length of pipe in sections) were different than expected in some areas, and these differences were documented for future reference. There were no significant holes or fractures visible in the storm sewer. The MIP/DPT samples were placed at locations near potential weaknesses in the storm sewer walls (See Appendix C).

Initial headspace results from soil samples indicated that only low levels of VOCs likely were in soil samples. This was later confirmed with TCE results ranging from 0.0028 to 0.220 mg/kg being found in soil samples. Results for degradation products of TCE also were low or nondetect. (Maximum was *cis*-1,2-DCE at 0.043 mg/kg at Location 102-013.) Three soil samples (Locations 102-008, 102-010, and 102-013) had ^{99}Tc detects. The maximum ^{99}Tc result was 2.39 pCi/g. Two soil samples (Locations 102-013 and 102-014) also had cadmium results of 0.53 and 0.63 mg/kg, respectively, which were above the provisional subsurface background concentration of 0.21 mg/kg. No other metals were detected above background.

From the visual inspection and sampling results, it can be concluded that the integrity of the storm sewer is intact; therefore, the storm sewer does not appear to be contributing VOCs and ^{99}Tc to the Southwest Plume. Additionally, neither metals nor radionuclides were routinely detected at concentrations above provisional soil background concentrations.

4.2.4 C-747 Contaminated Burial Yard – SWMU 4

No soil samples were collected for laboratory analysis during the course of the investigation for this unit. Formation samples were collected for descriptive purposes only.

4.2.5 Southwest Plume – SWMU 210

No soil samples were collected for laboratory analysis during the course of the investigation for this unit. Formation samples were collected for descriptive purposes only.