

**C-375-W9 Effluent Ditch (KPDES 001)
Solid Waste Management Unit (SWMU) Assessment Report**

SWMU/AOC NUMBER: 69

REGULATORY STATUS: SWMU

LOCATION: This SWMU is located near the Northwest corner of the Paducah Gaseous Diffusion Plant (PGDP) outside the controlled access area of the plant.

APPROXIMATE DIMENSION OR CAPACITY: Outfall 001 has the largest watershed and receives drainage at PGDP from an area of about 82.26 hectares (ha) (203 acres). The SWMU itself is approximately 3900 feet in length. The internal plant ditch system to Outfall 001 drains the northwestern part of the plant and is approximately 6224 meters (m) (20,420 feet [ft]) in length, unlined, and approximately 0.15 to 3.6 m (0.5 to 12 ft) deep.

PRESENT FUNCTION: Storm drainage ditch.

PRESENT OPERATIONAL STATUS: Outfall 001 receives wastewater and surface water runoff from multiple sources in the northwest portion of the plant. Facilities that drain into this portion of Outfall 001 include: the C-335 Process Building; the C-337 Process Building; the C-337-A Vaporizer (SWMU 71); the C-400 Cleaning Building; C-410 Feed Plant and Appurtenant Structures (C-411 Cell Maintenance Building, C-415 Feed Plant Storage Building, and the C-420 Greensalt Plant); and the C-600 Steam Plant and Supporting Facilities. Runoff from the C-400, C-410, C-415, C-535, C-537, and settling pond areas drain to the North-South Diversion Ditch Detention Basin, which is routed through the C-616 Lagoon for treatment prior to discharge to Outfall 001. The C-335 and C-337 Process Buildings drain to Outfall 001 via the storm sewer system. Historically, Outfall 001 also has received runoff from scrap metal storage yards located in the northwestern portion (approximately 20.4 ha [50.5 acres]) of the Outfall 001 watershed. In 2002, a storm water control basin was constructed, which was designed to limit the migration of contaminated sediments from the scrap metal removal work site.

Potential sources of contamination at the C-410 Feed Plant include uranium tetrafluoride, (UF₄) uranium hexafluoride (UF₆), hydrofluoric acid (HF), mercury, and equipment oils. The C-410 facility has evidence of roof leaks and open floor drains; therefore, it is possible that all of the contaminants have been discharged to the storm drains. Outfall 001 also receives treated discharge water from the scrap yard storm water run-off basin (C-613) and the Northwest Plume Groundwater Treatment Facility (C-612). The C-410 facility also contains potentially contaminated with polychlorinated biphenyls. According to the Phase II Site Investigation (SI), the soil around the C-410-B sludge lagoon was contaminated with polyaromatic hydrocarbons (PAHs) and ⁹⁹Tc. Sediment in this lagoon was contaminated with PAHs, ⁹⁹Tc, and uranium.

DATES OPERATED: 1951 to Present.

BRIEF HISTORY: This ditch system was trenched when PGDP was built in 1951. The reported monthly average flow through Outfall 001 into Bayou Creek is 10.53 million liters per day (mlpd) (2.79 million gallons per day [mgpd]). Outfall 001 became the responsibility of the Department of Energy (DOE) under the Kentucky Pollutant Discharge Elimination System (KPDES) permit in 1997.

Key Actions

- The Commonwealth of Kentucky has issued three notices of violation during the past 10 years for this outfall (total residual chlorine in 1997 and whole effluent toxicity in 1999 and 2002) according to the *Sampling and Analysis Plan for Site Investigation and Risk Assessment of the Surface Water Operable Unit (On-Site) at the Paducah Gaseous Diffusion Plant Paducah, Kentucky*.
- In 1992 DOE issued an *Interim Corrective Measures Work Plan for Institutional Control of Offsite Contamination in Surface Water* to restrict casual public access to creeks, outfalls, and lagoons in response to concerns about the presence of polychlorinated biphenyls and radiological contamination in the outfalls of PGDP. This corrective measure included the installation of fencing and the posting of warning signs at various off-site locations at PGDP, including Outfall 001. At the KPDES monitoring point for Outfall 001 and at New Water Line Road, warning signs were installed stating that the ditch is contaminated and should not be used for drinking, recreational, or fishing purposes.

SITE/PROCESS DESCRIPTION: Storm drainage ditch.

WASTE DESCRIPTION: Storm Water.

WASTE QUANTITY: Unknown.

SUMMARY OF ENVIRONMENTAL SAMPLING DATA: The previous sampling results for the ditches that flow into Outfall 001 are from Phase II, the WAG 22, SWMUs 7 and 30 Remedial Investigation (RI), and the WAG 27 RI. Surface water samples taken at the outfall detected technetium-99 (^{99}Tc) at 99 pCi/L, uranium-234 (^{234}U) at 4.7 pCi/L, and ^{238}U at 13.4 pCi/L. Sediment sampling identified the following contaminant levels in the Outfall 001 area: ^{99}Tc at 41 pCi/g, ^{234}U at 3.8 pCi/g, ^{238}U at 7.5 pCi/g, ^{239}Pu at 80 pCi/g, and ^{230}Th at 1.4 pCi/g.

Outfall 001 is routinely monitored in accordance with the KPDES Permit. In 2003, a Notice of Violation was received for chronic toxicity testing violations. A Toxicity Reduction Evaluation is ongoing to determine the source of the toxicity failures.

RELEASE SUSPECTED: The unit was used for discharging storm waters, which became contaminated from historical releases at the facility.

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

GROUNDWATER:	None known.
SURFACE WATER:	Potentially affected due to nature of unit and contaminants present.
SOIL:	Potentially affected due to nature of unit and contaminants present.
ECOLOGY:	Potentially affected due to nature of unit and contaminants present.

DOCUMENTATION OF NO RELEASE: No documented releases from this unit, contamination from upstream sources.

PRG COMPARISON: N/A.

IMPACT ON OR BY OTHER SWMUS OR AOCS: The C-337-A Vaporizer facility (SWMU 71) drains into Outfall 001.

WASTE AREA GROUPING ASSIGNMENT: N/A.

OPERABLE UNIT ASSIGNMENT: Surface Water Operable Unit (SWOU)

- This unit has been placed in the SWOU for further evaluation and/or remediation.

REFERENCES: *Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant, KY/SUB/13B-97777C P-03/191/14, April 1992*

Interim Corrective Measures Work Plan for Institutional Control of Off-Site Contamination in Surface Water, Outfalls, Creeks, and Lagoons, DOE/OR-1030, 1992

Remedial Investigation Addendum for WAG 22 Burial Grounds at Paducah Gaseous Diffusion Plant Paducah, Kentucky, DOE/OR/07-1141&D1, 1993

Remedial Investigation Addendum for WAG 23 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky, September 1994

Remedial Investigation Report for WAG 27 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1777&D2, December 1998

Sampling and Analysis Plan for Site Investigation and Risk Assessment of the Surface Water Operable Unit (On-Site) at the Paducah Gaseous Diffusion Plant Paducah, Kentucky, DOE/OR/07-2137&D1, April 2004

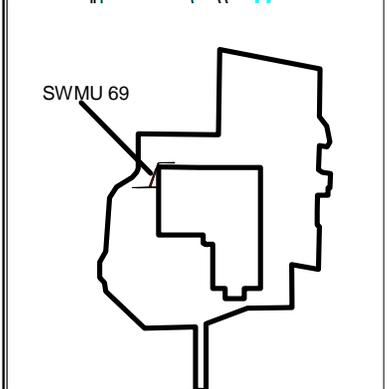
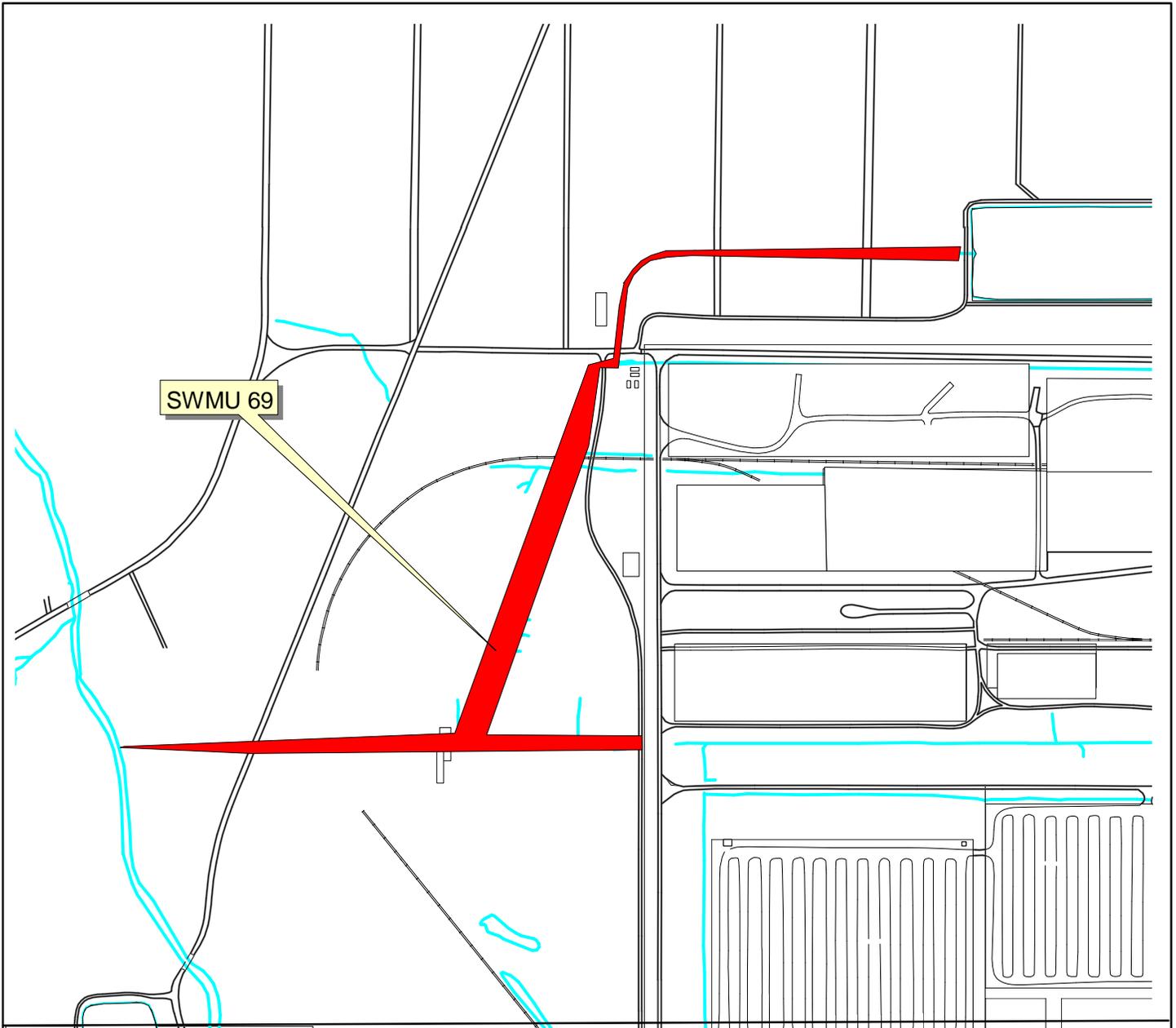
DATE OF ORIGINAL SAR: Unknown.

DATE OF SAR REVISION: 7/30/04.



June 2004

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SWMU 69**



LEGEND:

- SWMU 69 Area
- Buildings

0 300 600 Feet



U.S. DEPARTMENT OF ENERGY
 DOE OAK RIDGE OPERATIONS
 PADUCAH GASEOUS DIFFUSION PLANT



BECHTEL JACOBS COMPANY LLC
 MANAGED FOR THE US DEPARTMENT OF ENERGY UNDER
 US GOVERNMENT CONTRACT DE-AC-05-03OR22980
 Oak Ridge, Tennessee • Paducah, Kentucky • Portsmouth, Ohio



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