

REVISED

**PRELIMINARY ASSESSMENT/SITE INSPECTION REPORT
AND AOC/SWMU ASSESSMENT REPORT**

UNIT NUMBER: 3

UNIT NAME: C-404 Landfill

DATE: Revised 3/31/03

REGULATORY STATUS: SWMU

LOCATION: North of Virginia Ave., west –central portion of the Paducah Gaseous Diffusion Plant (PGDP). See enclosed map for a location of SWMU 3.

APPROXIMATE DIMENSION: Approximately 53,200 square feet, depth approximately 9 feet. This assessment report revision dated 3/31/03 adds an abandoned pipeline from the weir that discharged into a ditch, which ran northeast-southwest and just east of C-404. From this ditch, the leachate flowed into the NSDD. This area added an additional 37,000 square feet, depth unknown.

FUNCTION: From 1952 to 1957, C-404 was used as a surface impoundment operated as a neutralization/sedimentation treatment facility for uranium contaminated wastewater which was generated at the C-400 Decontamination Facility.

From 1957 to 1976, the impoundment was used for the bulk disposal of solid uranium-bearing wastes. In 1977 the placement began of bulk and containerized uranium contaminated solid waste on top of the previously filled area.

In May of 1986, the disposal of any waste at C-404 Landfill was halted. The landfill was closed as a hazardous waste landfill (Subtitle C) in July 1987.

BRIEF HISTORY: C-404 was constructed as an aboveground pond with tamped earthen floor and clay dike walls. It operated as a surface impoundment from approximately 1952 until early 1957. During this time all influents to the impoundment originated from C-400. The C-404 impoundment was

designed with an overflow weir at its southwest corner. From the weir, the surface impoundment effluent flowed west in a ditch (not the North South Diversion Ditch [NSDD]) and eventually discharged at Kentucky Pollutant Discharge Elimination System (KPDES) Outfall 015.

In 1957, the C-404 surface impoundment was converted to a solid waste disposal facility for solid uranium-contaminated wastes. There are no records concerning the cleanout of sludges and sediments from the pond when it was converted to a landfill. When the C-404 impoundment was converted into a disposal facility, a sump was installed at the weir. The sump was used to pump leachate into an underground transfer line. The transfer line discharged into a ditch, which ran northeast-southwest and just east of C-404. From this ditch, the leachate flowed into the NSDD. A partial clay cap was installed on the eastern end of the landfill in 1982.

In May of 1986, the disposal of any waste at C-404 Landfill was halted. The landfill was closed as a hazardous waste landfill (Subtitle C) in July 1987. The date of termination of the leachate discharge via the underground transfer line to the NSDD has not been determined. However it is known that, prior to landfill closure in 1986, this underground transfer line to the NSDD was not in operation and leachate from the C-404 Landfill was being collected in the sump for treatment at C-400. The wastewater from the treatment of the leachate was discharged to C-403 and ultimately to the NSDD. At some time following closure of C-404 Landfill, treatment of leachate from C-404 at C-400 was ceased and treatment of the leachate was transferred to C-752.

The currently abandoned underground transfer line is shown going east from the sump to the NSDD on drawing C5E16732 Revision 2 found in the Closure Plan, C-404 Low-level Radioactive Waste Burial Ground, KY/B-257.

OPERATIONAL STATUS:

Inactive
Post-closure requirements included in the Paducah Hazardous Waste Management Permit.

DATES OPERATED:

1952 to 1986

SITE/PROCESS DESCRIPTION:

See Function section above.

WASTE DESCRIPTION:

In the original surface impoundment area of the C-404 Landfill, the waste consists of uranium precipitated from aqueous solutions, UF₆, uranium metal, uranium oxides, and radioactively

contaminated trash. The upper tier of wastes contains the same type of wastes plus smelter furnace liners and drums of Extraction Procedure characteristically hazardous waste. (D006, D008, and D010).

Upon conversion of the weir to a sump, leachate was pumped into an underground transfer line. The transfer line discharged into a ditch, which ran northeast-southwest and just east of C-404. From this ditch, the leachate flowed into the NSDD. At some point prior to 1986, this pipeline was sealed off when the weir was converted to an enclosed concrete sump. Leachate is collected and removed from this sump as described under the Brief History section above.

WASTE QUANTITY:

Approximately 3,000,000 kg of uranium
Total volume is approximately 260,000 cubic feet. Some uranium-contaminated waste is also contaminated with TCE, radionuclides, and metals.

SUMMARY OF ENVIRONMENTAL SAMPLING DATA:

Groundwater results show the presence of metals, volatiles, and radionuclides. Results are summarized in each C-404 Landfill Semiannual Groundwater report. Leachate is sampled each time it is removed from the sump. Results are provided in the C-404 Landfill Quarterly Operations Report. Results show that selected metals including uranium, polychlorinated biphenyls, radionuclides, and trichloroethene are present.

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

Impacts unknown

GROUNDWATER:

Potential source of PGDP trichloroethene (TCE) and technetium-99 groundwater plume; however no statistically significant increases in downgradient wells has occurred since detection monitoring was continued in 1997. See documentation of releases below for details on monitoring status.

SURFACE WATER:

Potential historical source of contributing contaminants in the NSDD as a result of the transfer pipeline from the C-404 Landfill sump. No current surface waters are impacted.

SOIL:

Unknown

**ECOLOGY AFFECTED
(i.e., endangered/threatened species):**

None identified

DOCUMENTATION OF NO RELEASE:

Quarterly inspections are performed on the cap as described in the post-closure permit. In 1996, an increase identified in a downgradient well 84 for Technetium-99 required that the Department of Energy enter into compliance monitoring for the C-404 Landfill. After completion of four quarters of compliance monitoring, the landfill was returned to detection monitoring status due to insufficient evidence to show any significant and practical differences at the five percent level for all parameters in downgradient wells, including technetium-99.

**IMPACT ON OR BY OTHER
SWMU/AOC:**

SWMUs 201, 2, 26, 59, 526.

PRG COMPARISON:

None

RFI NECESSARY:

This SWMU is included in the Burial Grounds Operable Unit.

Other references include:

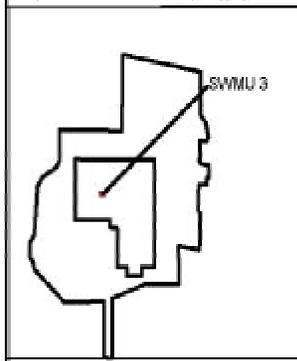
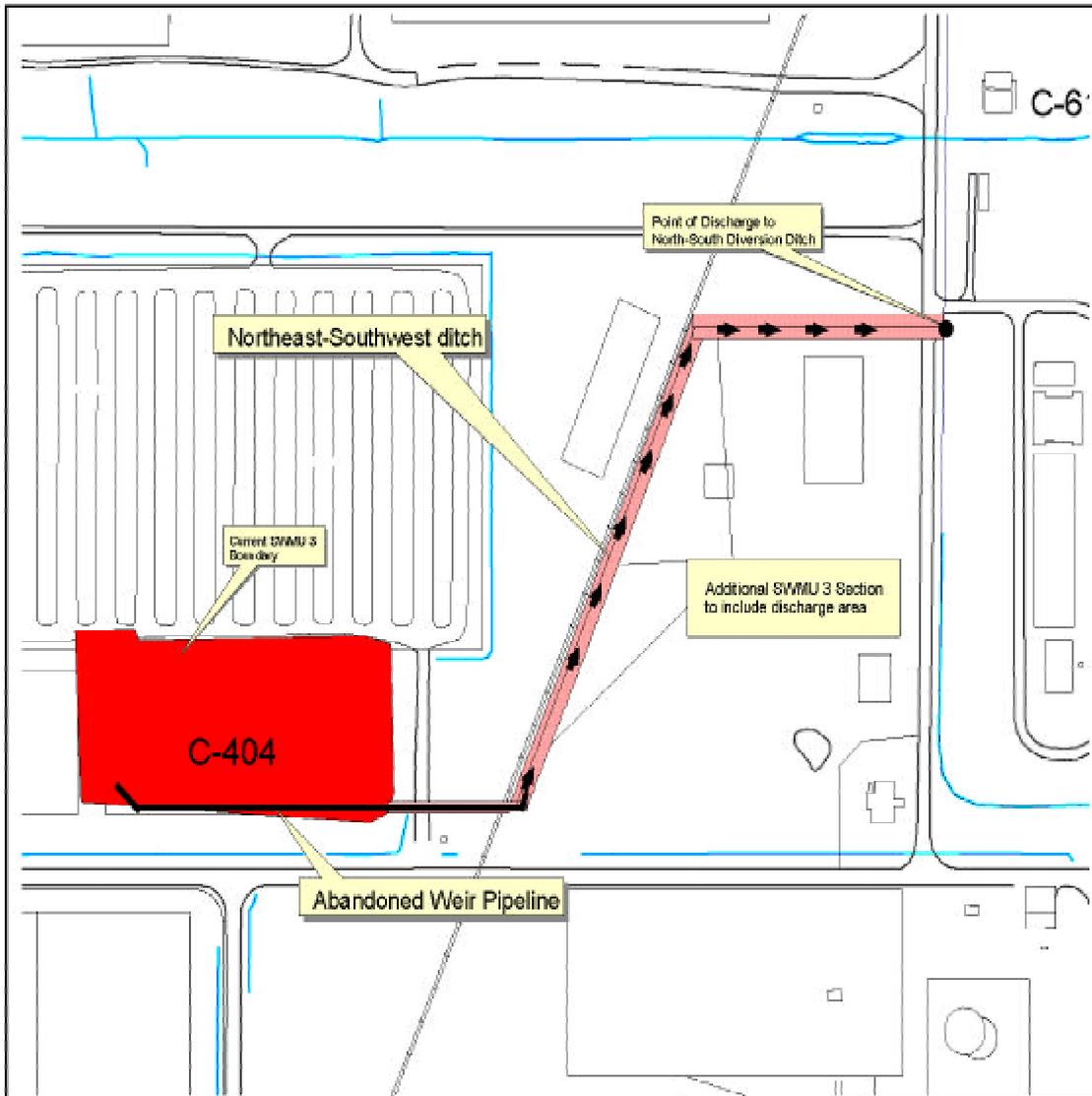
Closure Plan, C-404 Low-level Radioactive Waste Burial Ground, KY/B-257, Date Unknown

Groundwater Protection Program, C-404 Low-level Radioactive Waste Burial Ground, prepared by EDGe, Inc., Date Unknown.

Exposure Information Report, C-404 Low-level Radioactive Waste Burial Ground, KY/B-260, Date Unknown.

NOTE: Elements included in this outline shall be considered and incorporated, as appropriate, when developing the above referenced document.





LEGEND:

- SWMU 3 Area
- Facilities
- Streams

0 300 Feet



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


 BECHTEL JACOBS COMPANY LLC
 MANAGED FOR THE U.S. DEPARTMENT OF ENERGY UNDER
 US GOVERNMENT CONTRACT DE-AC-05-OR21404
 Oak Ridge, Tennessee • Paducah, Kentucky • Portsmouth, Ohio

SWMU 3 C-404 Landfill

CDM